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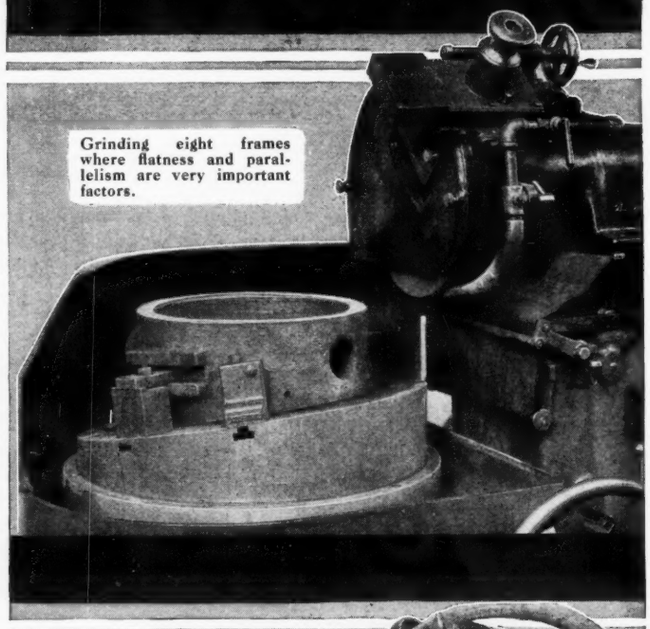

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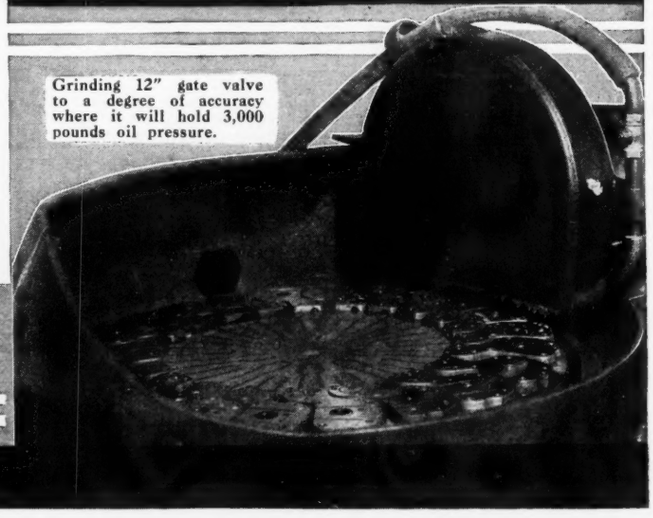

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AUTOMOTIVE INDUSTRIES
VOLUME 59 *Philadelphia, Saturday, December 1, 1928* NUMBER 22

Car Builders Deny Coercing Dealers in Finance Plans

Resolution condemning practice is passed nevertheless at New York conference of credit companies.

By John C. Gourlie

WHAT was generally termed "factory coercion" took the center of the stage at the Fifth National Finance Conference, held last week in New York by the National Association of Finance Companies. The topics that have agitated this group in previous years were largely overlooked in the concentration of interest in what was declared to be the policy of some manufacturers of requiring their dealers to use the facilities of a particular finance company. Emphatic denials were registered that any such policies were being followed.

The question had come up in other conferences but this year it was evidently believed to be of greater importance, possibly because of the organization of the Universal Credit Corp. to handle instalment selling of Ford cars and trucks, which meant that all the large companies now have financing affiliations. There was no disposition in the meeting, however, to name any companies as the chief offenders.

After some discussion, a resolution was passed to the effect that it was the sense of the meeting that manufacturers should "desist" from attempting to force their dealers to deal exclusively with any financing company. The matter came up again in a session to which only members were admitted, but it is understood that no further action was taken.

There were, in fact, numerous statements at the meeting and in various private group sessions that coercive tactics had not been employed and would not be, either by the manufacturers or the companies representing them in the finance field. It was declared that all legitimate means of convincing dealers of the desirability of placing their business with the companies chosen by the factories would be pursued but that no unfair methods would be considered.

The discussion largely centered around whether coercion actually was being employed, rather than concerning the rights of the interests involved. On the assumption that the policy objected to was in force by some companies, John W. Creekmur of Chicago suggested a suit to test the legal points of the controversy. Mr. Creekmur is general counsel of the association, but said that he spoke as a representative of one of the member companies, the National Bond & Investment Co. As the meeting closed there was little indication that any such action was to be taken.

A. G. Rumpf, president of the Motor Dealers Credit Corp., specifically denied that undue pressure had been brought to bear at any time on Studebaker dealers. The manufacturer's attitude was set forth in detail by George M. Graham, vice-president, Willys-Overland Co., who said:

"I think we have all reached the point when to protect his dealers, the manufacturer accepts the soundness of the principle of one-third down-payment and completion of the deal within 12 months on new car financing and 40 per cent down with a 12 months' limitation on used car financing.

"It is also true that manufacturers agree that where there is a sound national financing plan, dealers must not charge the retail buyer in excess of the rates it involves.

"But other important phases

of the subject are highly controversial and opinion divides. Each manufacturer has a right to conduct his business as he sees fit, and we do not attempt to lay down rules for others, but I am free to give the viewpoint of our own company, which may be entitled to some consideration since Mr. Willys was the first automobile manufacturer to develop a national finance plan. He also organized the company which operated it.

"Our experience has brought us to the belief that we should not force a dealer to use only the finance company picked by ourselves.

Use is Not Compulsory

"It is, naturally, our strong preference that he should use the national company. We exert every legitimate effort to bring this about. Our field men are instructed to emphasize the resources, stability and nation-wide service facilities of the finance company which holds our contract, but there is no pressure, no absolute rule. If local conditions make it good business for the dealer to employ other facilities, or if he can carry his own paper and make the profits, he is permitted to do so.

"It may be argued that this puts the dealer into the financing business, whereas he should confine himself to the automobile business, but it is our theory that the more money he makes, the better representative he is for us.

"This is, of course, all subject to the fundamental consideration that in no case should the retail purchaser pay higher rates than those involved in the national plan. We believe that the fairness of such a policy works to the ultimate advantage of the finance company, since it makes for good will."

Despite all statements to the contrary, many of the representatives of "independent" finance companies at the meeting evidently believed that coercion was being employed. On the other hand, it was pointed out informally by men from the national companies that this impression may have gained ground because in isolated instances factory field men may have exceeded their instructions and given a particular dealer the impression he had to place his business with the factory-affiliated company. But such instances, it was held, could not be numerous enough to affect the situation materially.

The matter of financing terms came in only for minor attention. The position on standard terms was reaffirmed and C. C. Hanch, general manager, urged particular attention to the need for conformity, since the 1928 figures had shown a slight, though appreciable, tendency to increase the proportion of non-standard paper.

Speculation Causes Concern

O. F. Meredith, vice-president, Foreman National Bank, Chicago, addressed the gathering in a manner which showed he had given more attention to the problems of the finance companies than is the rule with bankers. Referring to the current stock market speculation, he said that paper profits may have led to more buying on time than was economically justified, and this was the only feature of the financing situation to cause him particular concern. He said:

"Prominent bankers have repeatedly issued warnings against what appeared to be wild speculation. Sooner or later those men will be right and when they are, it is likely to cause a reaction on time paper. There can be little doubt of it and the merchant selling on long terms and the finance companies and banks buying such paper should have constantly in mind plans to safeguard themselves against excessive repossessions or past due paper. We know what a local disaster will do and we should have in mind that when the public finally is left with the exploited stocks, the whole nation will feel it and where your commitment has 12 months or more to run, you can't do much about it."

Turning to the automobile dealer situation, Mr. Meredith said that too many dealers were financially weak, and although he favored recourse financing, he felt that indorsement by dealers of such character was little or no protection to the finance company.

Particular attention to the credit situation, which is of enormous consequence to the finance companies, was given by Mr. Meredith and by George F. Roberts, vice-president, National City Bank.

Mr. Roberts, pointing out the anomaly of varying rates on different classes of loans and long term investments, said that commercial loans were carrying lower rates because the paper was eligible for discount with the Federal Reserve banks. Although this situation was likely to continue so long as speculation forced stock prices up and called for large sums of credit irrespective of the interest rate, he pointed out that the rate for brokers' loans is far out of line with rates for long term investments, yet in the long run these stocks and bonds in the market must be taken by somebody for long term investments. Continuing, he said:

"Furthermore, it is agreed that originally the main factor in the rise of stock and security prices was the decline of interest rates. What does this change of rates mean? Are all interest rates to be permanently higher? If so, how can the present level of stock and security prices be maintained, and if not, where are the new supplies of credit coming from to bring them down?

Purchasing Power May Shrink

"Of course, we are familiar with the argument based upon the increasing wealth of the country, and the multiplied number of investors. It is good as far as it goes, but see just how far it goes. The increasing wealth can have bearing on this situation in just two ways, to wit: as it produces a flow of purchasing power and as it can be made the basis of bank credit. It cannot be made the basis of bank credit except as we have increasing bank reserves. The flow of income is all right, but the difference between the present situation and that which we have become used to in recent years is that heretofore we have had the flow of income, plus $100,000,000 of bank credit for each $5,000,000 or $10,000,000 of gold imports, while now it looks as though our purchasing power is to be reduced to current income with perhaps a comparatively small annual addition to the gold reserves."

Milan V. Ayres, statistician for the association, urged diversification of the business of finance companies, many of which are relying entirely on automobile business. The domestic market for automobiles, he pointed out, is approaching a more or less definite stabilization point, with a small annual increment of new buyers, and it would be well, therefore, for the companies to look elsewhere for expansion of their interests.

The stability achieved by automobile financing in recent years is emphasized by the latest survey of the National Association of Finance Companies. This year, as compared with last, there was a minor gain in the average loss per repossessed car, but percentage of repossession was virtually unchanged, as was the proportion of new cars sold on instalments. Used cars sold on time declined slightly in percentage.

The truck figures reveal a considerable increase in

the loss on repossessed commercial vehicles, a slight gain in repossessions of new trucks, but a decrease in repossessions of used trucks.

A new figure appears in this year's compilation—skips per 100,000 transactions. Skips are cases where defaulting purchasers change their address, leave the state, or otherwise seek to avoid the consequences of non-payment of instalments. These are found to be 4.7 per 100,000 in passenger cars and .8 in commercial cars.

Composite Experience of a Large Number of Representative Finance Companies, Based Upon Individual Averages as of Nov. 1 of Each Year

	Passenger Cars				Commercial Cars	
	1925	1926	1927	1928	1927	1928
Average Direct Loss Per Repossessed Car*						
12 or less equal monthly payments	$50	$65	$43	$56	$46	$121
13 to 18 equal monthly payments	78	94	58	75	57	**
Increase of Losses Over Standard Terms						
13 to 18 equal monthly payments	57.0%	44.0%	35.0%	34.0%	24.0%	**
Percentage of Repossessions						
New cars with down payment of 33.3%	1.7%	2.1%	2.7%	2.8%	2.6%	3.5%
New cars with down payment of 25%	3.8	4.0	5.9	4.1	**	**
Used cars with down payment of 40%	3.0	4.3	5.2	5.3	4.2	3.1
Used cars with down payment of 35% or less	6.2	8.6	6.9	10.9	**	**
Increase of Repossessions over Standard Terms						
New cars with down payment of 25%	122.0%	92.0%	115.0%	46.0%	**	**
Used cars with down payment of 35% or less	105.0	101.0	31.0	93.0	**	**
Average Amount of Note Purchased						
New cars	$550	$595	$574	$606	$840	$832
Used cars	280	277	286	295	368	395
Percentage Sold on Instalments						
New cars	68.2%	64.5%	58.0%	58.1%	54.9%	51.6%
Used cars	62.8	65.2	63.1	60.8	52.4	48.3
All cars	65.5	64.8	60.8	59.5	53.4	50.4
Percentage of Trade-ins, Sales, Etc.						
Trade-ins on sales of new cars	..%	..%	72.0%	69.4%	52.5%	51.2%
Trade-ins on sales of used cars	..	..	37.1	39.4	22.2	22.3
Total trade-ins in per cent of new cars sold	99.0	90.0	116.0	115.5	67.7	64.1
Used cars sold in percent of new cars sold	..	..	118.5	117.0	68.6	57.8
Used cars junked in per cent of total trade-ins	..	..	6.9	8.1	10.8	16.4
Skips Per 1000 Transactions	..%	..%	..%	4.7%	..%	.8%

	1925	1926	1927	1928
Instalment Paper Ratios				
Retail paper with more than 12 monthly payments	18.3%	13.2%	12.4%	14.5%
Retail paper with less than standard down payment	19.4	9.0	5.2	6.1
Used car paper to total paper purchased	31.0	33.0	26.8	38.0
Used car paper per cent with recourse ***	..	..	65.8	66.0
Cos. taking all used car paper with recourse ***	50.0	46.0	36.8	37.6
Cos. taking part used car paper with recourse ***	44.0	40.0	55.6	54.8
Cos. taking all or part used car paper with recourse	94.0	86.0	92.4	92.4
Used car paper where note exceeds Blue or Red Book appraised value	..	..	..	27.3

* This means amount owing minus amount received from sale.
** No cases reported, or too few to justify inclusion.
*** Including repurchase agreement.

AUTOMOBILE imports into France increased practically 50 per cent during the first seven months of the present year, the figures being 4724 compared with 2403 for 1927. The number of imported trucks and tractors increased from 36 to 150.

French automobile exports dropped 18 per cent, the figures being 22,884 for the first seven months of the present year, compared with 28,063 for the corresponding period of 1927. The biggest export business was done with Algeria, second place being taken by Spain and third position by Great Britain. The number of trucks and tractors exported showed practically no variation.

AN additional credit of $2,000,000 has been voted for for French road maintenance during 1929, which amount is considered totally insufficient by the automobile clubs in view of the fact that the increased revenue from automobile and bicycle taxes during 1928 is expected to be $7,430,000. Only one quarter of the revenue received from automobile taxes is used for road maintenance, and with increases at the rate of $2,000,000 a year, 10 years will be necessary to modernize the French national highway system.

Last year the total amount paid by one million French motorists in direct taxation to the State was $103,617,000. Local taxes are not included in this amount.

Ideas for Production Men

General management problems discussed along with details of gear manufacture, cylinder honing, material handling and other subjects.

By K. W. Stillman and A. F. Denham

NO automotive man, no matter how casually interested in production matters, could have attended the Production Meeting of the Society of Automotive Engineers in Detroit last week without taking away many valuable ideas, while for the full-fledged factory men it was an unusually interesting and thought-provoking meeting.

General management problems such as low-cost production, accounting for depreciation and the interpretation of production records were discussed for the benefit of all production men, and a number of particularly able and interesting papers offered definite information of value to those particularly interested in such diverse subjects as gear manufacture, cylinder honing, material handling layouts and equipment, power transmission problems, time studies and others.

Particular credit is due to E. P. Blanchard, chairman of the Production Division, and his co-workers in assuring the success of the division's actvities by producing a meeting which more than justified the expectations of the unusually large number of production executives attending it. An indication of the status which the division has attained is revealed in the receipt of a telegram from Philadelphia urging that the 1929 meeting of the Production Division be held in that city.

The meeting opened Thursday morning, Nov. 22, and by the time of the banquet that evening, at which K. T. Keller, Chrysler Corp., spoke, the attendance taxed the capacity of the Book-Cadillac ballroom, its balconies and all the contiguous rooms which could be thrown open to the guests.

Each of the three sessions was devoted to various aspects of a single subject—that of Thursday afternoon being given to gear manufacture, Friday morning to material handling, and Friday afternoon to power transmission. The other two sessions were of miscellaneous makeup and included papers and discussions on a variety of subjects, all of which, as shown by the amount of discussion resulting, being of particular interest to production executives.

SOME very interesting production ideas were introduced at the opening session but lack of time prevented as full discussions as were undoubtedly waiting for expression.

Reporting for the Subcommittee on Processes and Equipment, G. W. Blackinton, Continental Motors Corp., gave the early returns from an investigation being made in diamond boring methods. John Younger, Ohio State University, reviewed the economics and fundamental management ideas underlying the production methods of Ford Motor Co., and in the third paper L. A. Baron, Stutz Motor Car Co., gave a detailed and highly informative review of the influence of depreciation on production economics and ways and means for its determination.

The diamond boring investigation, which is not yet complete, brought forth information substantiating that contained in the article on the subject appearing in *Automotive Industries* (Nov. 17). This method of removing metal has been used principally on the bores of connecting rods, and so far there appears to be little uniformity of methods either as to the type of equipment used, feeds, speeds or depth of cut.

From the returns received, Mr. Blackinton was enabled to state that apparently the carbon diamond gives best results usually and that diamond boring has not been uniformly successful with hard metals such as cast iron.

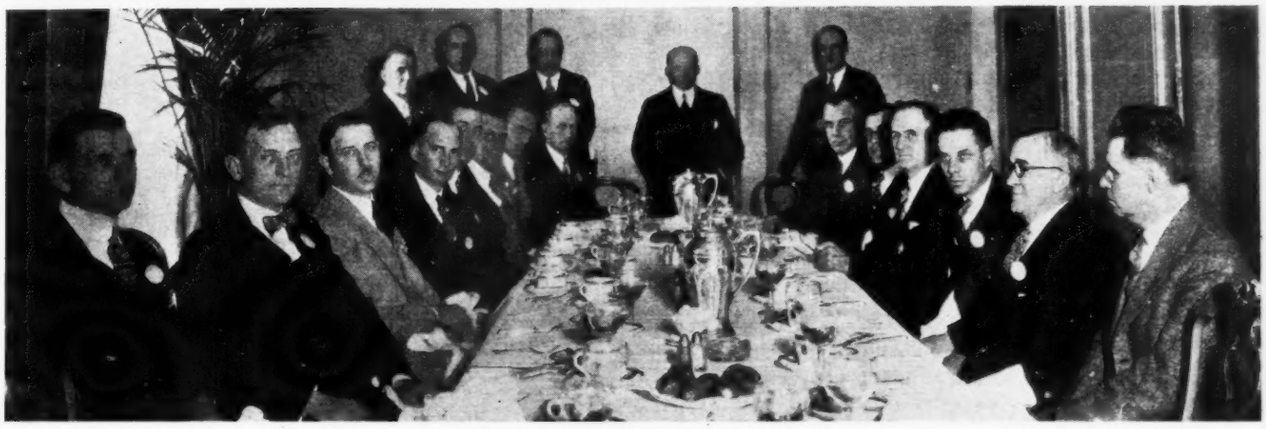
JAMES COULTER, vice-president, Automatic Machine Co., suggested that users conduct more experimental work to determine what further productive advantages might be obtained from diamond boring, particularly with regard to hard materials. He pointed out the need for very accurately running spindles and the resultant fact that as spindle speeds are reduced, bearing fits can be made tighter and a higher degree of accuracy obtained.

Mr. Younger, in his paper on Ford methods, went back of actual processes and expressed Ford management in terms of manufacturing laws codified recently by L. P. Alford and as a practical application of simultation, the management fundamental expressed a year ago by E. P. Blanchard.

Mr. Younger's opinion that the Ford wage plan of setting a standard of output and paying what amounts to straight wage for that output is an ideal one was questioned by Norman G. Shidle, *Automotive Industries*.

While not taking direct issue with Mr. Younger's belief that the Ford plan of subordinating individual efforts and productive abilities to the benefit of the entire production program was advantageous to the carrying out of management plans, Mr. Shidle objected to the plan on social grounds. The trend in both economic and social fields during the past 25 years, Mr. Shidle said, has been to invigorate the mental processes of the individual. As this tendency can be pronounced beneficial to the development of mankind, Mr. Shidle questioned the use of an economic plan such as Ford

Abound at S.A.E. Meeting



SPEAKERS and subcommittee chairman photographed at S.A.E. Production Meeting. Seated, left to right: Erick Oberg, George W. Blackinton, L. A. Baron, Guy Hubbard, F. W. Stein, R. S. Burnett, Norman G. Shidle, Julian Chase, A. B. Cox, H. D. Tanner, P. L. Tenney, C. G. Williams, C. B. Veal, Fred H. Colvin. Standing, left to right: J. B. Armitage, John Younger, W. W. Nichols, J. W. Bray, E. P. Blanchard

uses which tends to stifle constructive thinking and initiative during a large part of a workman's waking hours.

Another point brought out by Mr. Younger was the great productive economies made possible by the Ford plan of employing highly specialized machine tools capable of very low cost production. Issue with this point also was taken by Mr. Shidle, who pointed out that the market demand for new designs necessitating new machining methods made this a very intricate problem, and one that couldn't be solved solely on a basis of present low cost production. He cited the difficulties attending the introduction of the Model A as an example of what might well happen whenever the market side of the problem is neglected for initial low cost production.

FULL discussion of Mr. Baron's paper on depreciation was impossible for lack of time—a very unfortunate occurrence since it dealt with a subject about which there is much controversy and misunderstanding.

The main point emphasized in the paper was that all plant and equipment eventually wears out and that in order to keep capital intact during the period of the unpreventable deterioration of values, depreciation losses must be accounted for and must be absorbed in the selling price of the product in whose fabrication the assets are used.

A question as to how general overhauls or renewals should be handled was answered by Mr. Baron. If the overhaul increases the active life of the machine, like the renewal of the spindle bearings of an engine lathe, for example, Mr. Baron believes it should be paid for by the depreciation reserve fund. Immediately, however, the probable life of the overhauled tool should be reappraised and a new depreciation rate set for it.

The essence of John Younger's paper was that the Ford Motor Co. has obtained its very low manufacturing costs by following certain laws of manufacturing management. These laws, some of which have been codified by L. P. Alford, are as follows:

1—Concentration upon a single product.

2—Keeping each article distinct.

3—Extensive use of conveyor systems.

4—Subdividing work so that each worker has only one or very few operations to perform.

5—Providing the required quantity of material of the specified quality at the required time and place.

6—Assigning a definite amount of work to each man to be done in a given time.

7—Wage payment on straight day-rate.

8—Acquirement of sources of raw material.

9—Reduction of inventories of material in stock and in process.

10—Foregoing the taking of intermediate profits on processes between raw materials and finished products.

11—Keeping materials and parts in rapid motion to assure quick turnover.

12—Using Machine tools that give the lowest production cost and require the least manual control.

13—Employment of machines that perform several operations simultaneously with the same amount of labor as for one operation.

14—Sending machines to the overhaul shops as standardized periods.

15—Recognition that the obsolescence factor is more potent than depreciation of machine by wear.

Mr. Baron's paper covered the following points:

Depreciation is the decline in value of plant and equipment which is certain to occur as a result of gradual wear and tear and obsolescence. It is caused by the possession and use of an asset and is therefore a part of the cost of production.

THE accountant attempts to recover this loss in the value of capital assets by charging it into the cost of production and collecting it as the product is sold. The big question is to determine how long a piece of equip-

ment should last. This is a question for the engineer to decide and it should be based on a painstaking, intelligent estimate backed by the experience of the estimator and the trade in general.

Very little group action along this line has been taken by the automotive industry with the result that agents of the Treasury Department are now engaged in studying depreciation practices in the industry but, as this study is probably being made solely from the standpoint of tax revenue, the industry may be at a disadvantage in comparison with those industries which have done collective work in standardizing depreciation practices.

There are numerous methods of calculating and applying depreciation and the one to use depends to a large extent upon the variety of articles produced in a plant. Proper classification of accounts is a prime requisite to good depreciation accounting and all charges should be computed and charged off with express reference to specific items, units, or groups of property, rather than attempting to include all types of buildings, for example, under a single classification.

Depreciation a Production Charge

The whole theory of accounting for depreciation is to maintain intact the value of the original capital invested. To do this the loss of capital due to depreciation must be retained in the business and must never be confused with profits. Depreciation is a production charge and should be distributed to the product in the same way that other items of burden or overhead are distributed.

While many methods of distribution are available, the most favored one now is the production-center or machine-center plan by which equipment, buildings, etc., are grouped into production centers such as drill-press centers, or into production line centers such as cylinder block line, etc.

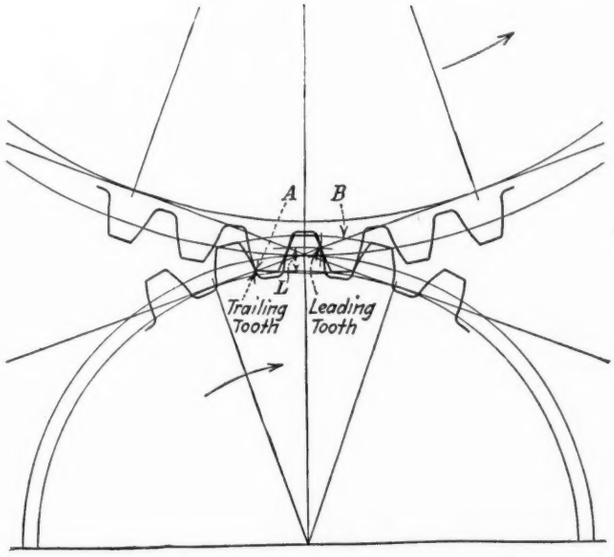
Depreciation should be based on original cost. Replacement equipment should be an improvement over the replaced machines and this, with the fact that depreciation reserves produce earnings which should be added to the reserve, make it possible to select replacement equipment with a view to lowering production costs.

Budgeting expenditures for replacement equipment is as logical as to budget productive materials.

Two papers on gears and one on honing were given at the second session, P. L. Tenney, Munni Products, presiding. A paper on the recently developed Pratt & Whitney gear-shaving process was presented by Hubert D. Tanner, manager, Gear Division, Pratt & Whitney. This process was covered in detail in the Nov. 3 issue of *Automotive Industries*, to which the reader is referred for details. (Incidentally, in the second paragraph of that article the dimension 0.0001 in. is an error, of course, it should be 0.001 in.)

A theoretical paper discussing integral contact gearing, entitled "Dispelling the Mystery of Gear Tooth Breakage, Wear and Noise," was presented by A. B. Cox, consulting engineer. Mr. Cox applied his tooth development to the involute type, designing it so that at the same instant two teeth go out of contact, another pair is coming into contact. Mr. Cox stated that this method of design would materially increase gear strength, reduce noise and wear by reducing gear vibration, especially in the harmonic frequencies. No investigation of composite tooth forms has as yet been made, it appeared, in answer to a question on this subject from O. W. Boston of the University of Michigan.

An interesting paper on the history of the development of honing, its present application and some of its future possibilities was presented by C. G. Williams of the Barnes Drill Co. Mr. Williams forecast the possibility of honing from the rough casting without preliminary reaming in the future with the development of better stones and methods. In the discussion it was brought out by Mr. Williams that production honing is now used up to depths of cut of 0.020 in., while cuts of as much as 0.035 in. have also been made experimentally.



Tooth contact in stub-tooth gears. Specifications of these gears are: Driver, 25 teeth; driven, 47 teeth; pitch, 7; pressure angle, 20 deg.; contact distance AB, 1.36 pitches. L is the beam length in the piston shown

A summary of Mr. Cox's paper follows:

Integral contact gears are the solution for most of the problems of gear-tooth fatigue and breakage, wear and pitting, and vibration and noise. Compared with other gearing designs, integral contact gearing has the following qualities:

Much greater strength, both for steady load and for shock load.

Much longer life for the same materials or permitting the use of cheaper materials and less expensive manufacturing processes.

A greater degree of initial quietness and enduring quietness.

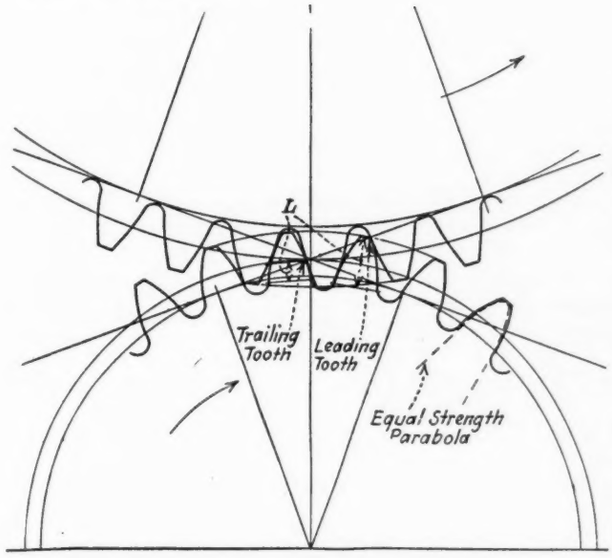
For single-tooth-contact gears, the safe strength must be calculated for the position of mesh that is of least strength. This position, in accurate gearing, is when the trailing tooth has not quite come into contact and the leading tooth is carrying all the load applied at a considerable distance from the root of the tooth.

When Inaccuracies Exist

If inaccuracies exist in the tooth sufficient to keep the trailing tooth out of mesh until the leading tooth is leaving contact the strength determination will be made when the entire load is applied at the tip of a single tooth.

With integral contact gears in which two or more teeth are designed to be in contact at all times, any such condition of high stress is impossible, since the minimum steady load strength of such gears is the sum of the strengths of the leading and trailing teeth and therefore is greater than any single tooth contact design.

Even should errors in tooth spacing and contour of two-tooth-contact gears prevent the trailing pair of teeth from making contact in time to help carry the



Integral-contact gears. These have the same specifications as those illustrated on the opposite page, except that the contact distance is 2 pitches

load, there are three things which tend to relieve this condition:

Under any practically permissible error the leading tooth will deflect enough to overcome the effect of the error and cause the trailing tooth to come into contact long before a breaking stress in the leading tooth has been attained.

If the load on the leading tooth is further increased up to the breaking point, the trailing tooth will take up an increasingly greater proportion of the total gear load as the leading tooth deflects and, by the time the stress in the leading tooth reaches the breaking point, the trailing tooth will have taken up so large a share of the total load that it, too, will be close to the breaking point, thus bringing about an equalization of stress between the two teeth under peak loads.

Third, because wear of gear tooth contours are due mainly to tooth pressure, errors of either tooth contour or spacing which make one pair of teeth carry more than their share of the load will wear down more rapidly.

Mr. Williams pointed out that cylinder honing as a production possibility was not really considered until about three years ago. Honing is a phase of grinding with a wide wheel and has the advantages that it will not dig into soft spots. It also does not reproduce the chatter marks of the grinding wheel. Honing as at present performed will not correct for misalignment of cylinder bores and thus requires preliminary reaming. It will remove taper and out of round. The best honing speeds for automobile engine cylinders seem to be a peripheral speed of 200 to 250 ft. per min. and a reciprocating speed of 50 to 60 cycles per min.

Satisfactory Stones a Problem

One of the greatest problems encountered has been to obtain stones of the proper grit and composition, and uniformity between them. Some improvement in this has been noted lately but much is yet to be desired. Considerable experimenting is necessary on new bonding materials. Grinding wheel compositions have shown themselves to be no guide for honing stone design.

While honing has been considered chiefly as a finishing operation, it is adaptable to removal of metal on a large scale. The future development of stones may make it possible to hone from rough cast surfaces. Hardened cylinders have been successfully honed. Honing of non-

Record of Honing Operations by 11 Companies

Company (No.) and Operation (Letter)	Motor, Hp.	Spindle Speed, R.P.M.	Reciprocating Speed, Cycles per Min.	Cylinders			Material	Stones, Grade and Quality Designation	Lubricant	Time, Min.	Blocks per Set of Stones
				Diameter, In.	Length, In.	No.					
1A	20	150	40	3 1/8	8 1/16	4	Cast iron	80-DN	Kerosene	2	....
B	20	150	50	3 3/16	8 1/16	4	Cast iron	150-DL 150-DM 180-N-2 180-G-6	Fish oil	3/4	800
2A	5	315	70	3 1/2	9 1/8	8	Cast iron 20%	120-G-6	Kerosene 60% Seal oil 40%	25	60
B	25	260	60	3 3/8	9 1/8	8	Cast iron	120-G-6		3 1/2	60
3A	7 1/2	200	50	3 3/4	9 1/8	6	Cast iron	173-LAP	Kerosene	9	80
B	7 1/2	200	50	4 1/4	9 1/8	6	Cast iron	174-LAP	Kerosene	9	80
C	7 1/2	200	60	4 3/4	9 1/8	4	Cast iron	174-LAP	Kerosene	9	80
4	7 1/2	184	38	6 3/4	16	2	Semi-steel	80-H-6 175-H-6	Seal oil	2 1/2	1,000
5A	5	312	38	4 1/4	12 1/8	1	Cast iron	L-6-P	Kerosene	3	150
		312	38	4 1/2		6					
		230	30	4 3/4		6					
		230	30	5 1/4							
B	....	193	24	5 1/2	12 1/8	1	Cast iron	L-4-P	.....	....	....
		194	24	5 3/4							
		156	20	6							
C	....	156	20	6 1/2	15 11/16	....	Cast iron	L-4-P	.....	....	....
		156	20	6 3/4							
6	5	500	160	2 1/2	4 1/2	1	Hard steel	K-120	Kerosene	5	700
7A	5	253	60	3 3/8	8 3/4	6	Cast iron	G-5-N	Kerosene	5	240
B	....	....	....	3 3/16	8 3/4	6		120-H		5	240
8A	20	250	60	2 7/8	8	6	Grey cast iron	120-L-6	Kerosene	1	200
B	....	....	....	3 1/4	8 1/4	6	Alloy	.....	.....	5	200
9	25	200	40	3 1/4	8 13/16	6	Special cast iron	80-G-4	Mineral seal-oil	1	1,500 2,000
10	....	168	40	4	10 1/8	4	Semi-steel	80-G-4	Kerosene	3	75
11	7 1/2	124	11	7	13	2	Cast iron	.....	Kerosene	12	75

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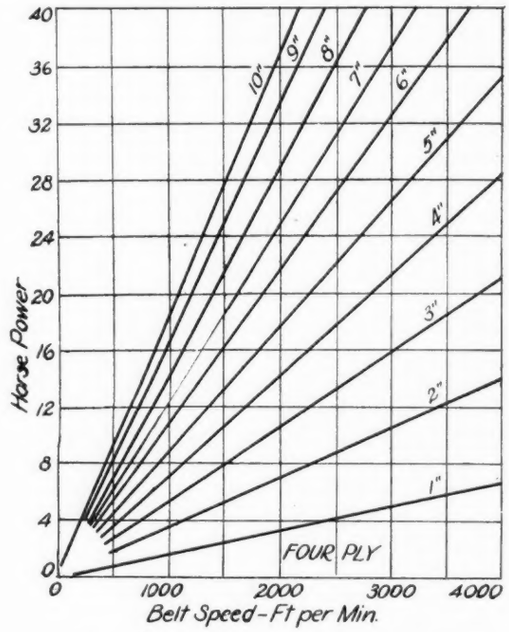

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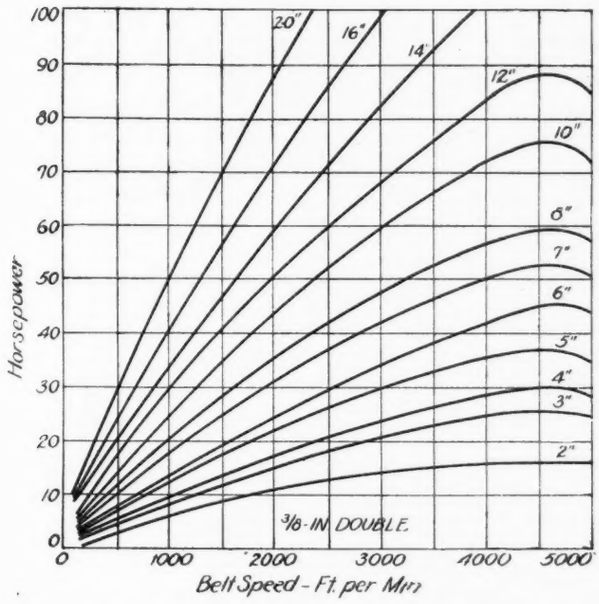

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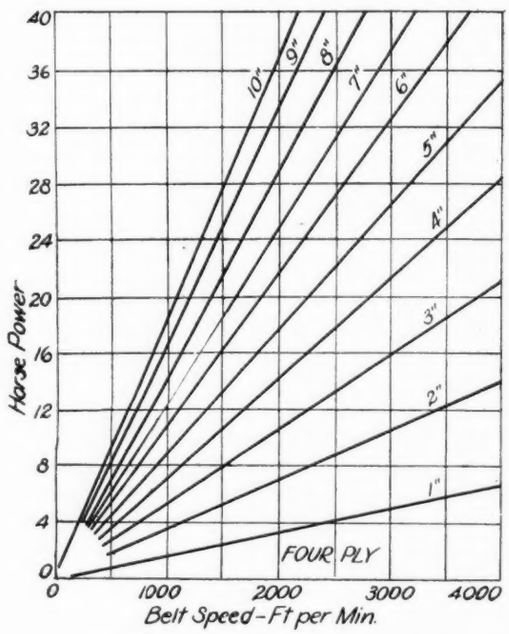

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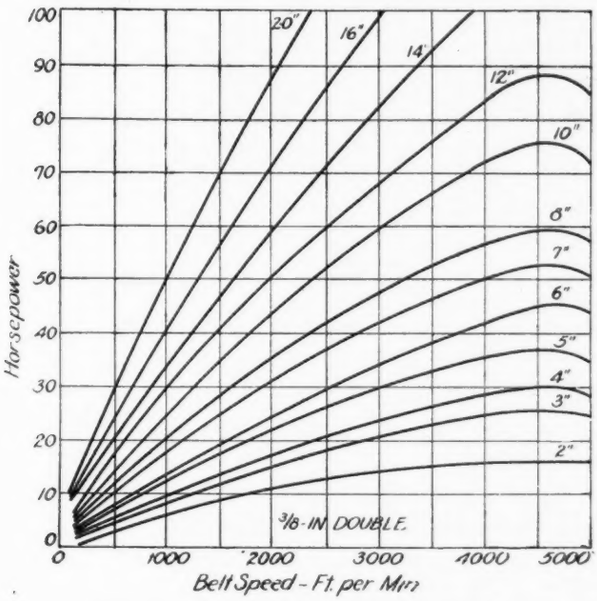

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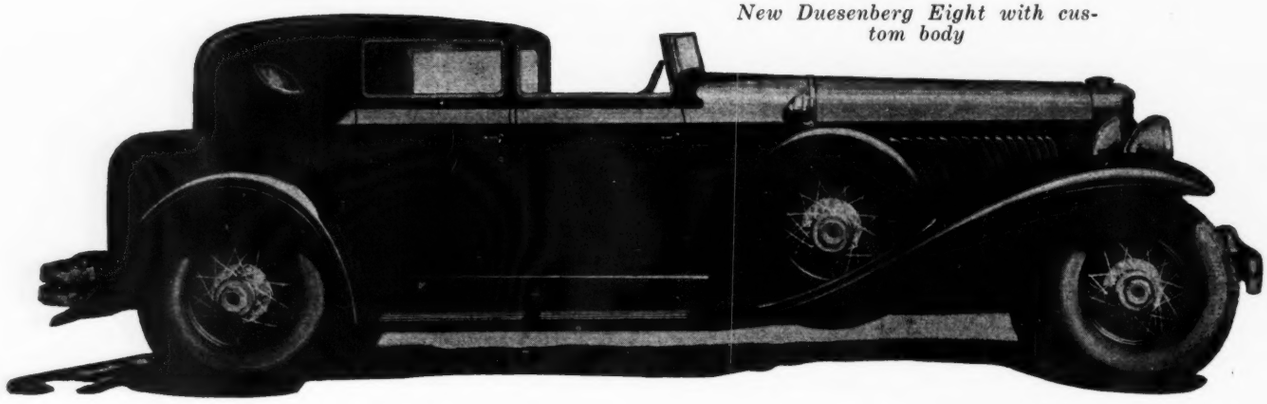
265 Hp. Duesenberg Eight



New Duesenberg Eight with custom body

Price does not include body. Engine, developed from racing practice, has 420 cu. in. displacement and turns up to 5200 r.p.m. Speed in second gear is 89 m.p.h.

AFTER more than two years of preparation, the new Duesenberg car is making its appearance at the New York Salon this week. It combines great speed with ruggedness, and for a car of its size is not unduly heavy. Its riding qualities are unusual and are maintained up to speeds of more than 100 m.p.h.

Many of the elements of the car are the results of years of experimentation by Fred S. Duesenberg. The rear axle, for instance, is the culmination of 14 years of development work. In no instance has cost been spared nor effort saved to insure safety and comfort at the highest speed of which the vehicle is capable.

While no maximum speed test on a long straightaway has yet been made, with a standard touring body and with the top and windshield up and fenders on, the car has attained 116 m.p.h., while a maximum speed of 89 m.p.h. has been reached in second gear.

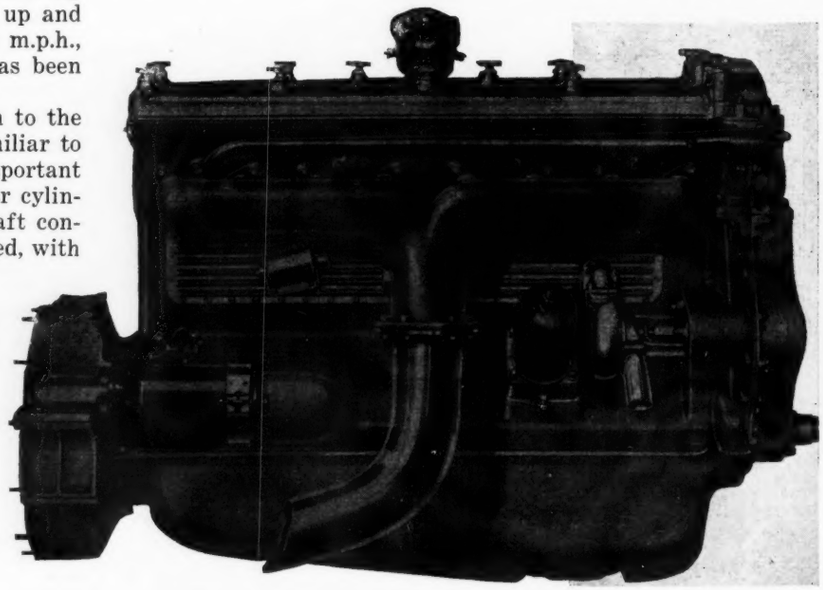
The engine itself is similar in design to the Duesenberg eights which have been familiar to the racing world for years. One important change is the adoption of four valves per cylinder. The same double overhead camshaft construction as in the racing cars is employed, with front end and accessory drives by chain. Many changes are apparent, however, in the carburetion, manifolding and ignition systems.

The frame, likewise, is of new design. Improvements have been effected in the braking system. Front and rear axles have been given very close attention, while the chassis is lubricated by an improved system which relieves the driver of all responsibility in this connection, even the universal joints, shock absorbers and clutch throwout collar bearing being automatically lubricated by the engine every 75 or 80 miles.

A large number of chassis parts are chromium plated, even to the exhaust manifold. A new muffler was designed by Mr. Duesenberg to take care of the large volume of exhaust gas from so large an engine.

The engine, which is the most powerful every developed for a passenger car, has a bore of 3¾ and a stroke of 4¾ in., giving a total piston displacement of 420 cu. in. It develops 265 hp. at 4200 r.p.m. and is capable of turning up to 5200 r.p.m.

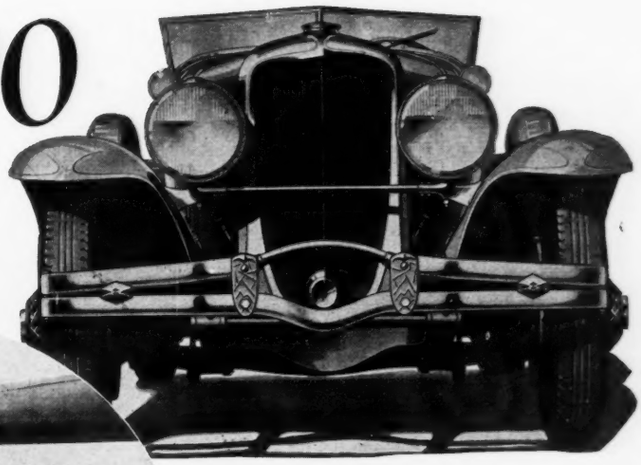
Two camshafts actuate the 32 valves, each shaft being carried by five babbitt-lined bearings. The inlet valves and shaft are on the right side, while exhausts are on



Exhaust side of Duesenberg 265 hp. engine

Costs $8,500

By
M. Warren Baker



Above—Front view of new Duesenberg fitted with open body. Left—Fred Duesenberg, veteran designer, at the wheel of his latest creation

the left. The camshafts are driven through a 2-in. silent chain, from a transfer gear, which in turn is driven by a second chain from the crankshaft. Each chain runs over an automatic takeup.

Both shafts are hollow, and oil is forced through them to the bearings. The cams operate directly on cup tappets, which fit over the valve springs and contact directly with the valve stems. The tappets are adjustable for clearance and operate in a bath of oil.

Intake and exhaust valves are of silchrome steel, and are of 1½ in. and 1 7/16 in. clear diameter respectively. They set in the cylinder head at an angle of 30 deg. The stems are water-jacketed almost the full length.

Mr. Duesenberg in his race car experience found that two valves are more easily cooled than one, and he believes this to be the explanation of the approximately 20 per cent increase in power as the result of the adoption of dual valves.

Spark plugs are located at the center of the cylinder head and also are water-jacketed. The combustion chamber in the gray-iron cylinder head is carefully machined to give a compression ratio of 5.2 to 1.

The cylinder block, upper half of the crankcase, and timing chain case are all in one casting. The cylinders are water-jacketed the entire length of piston travel.

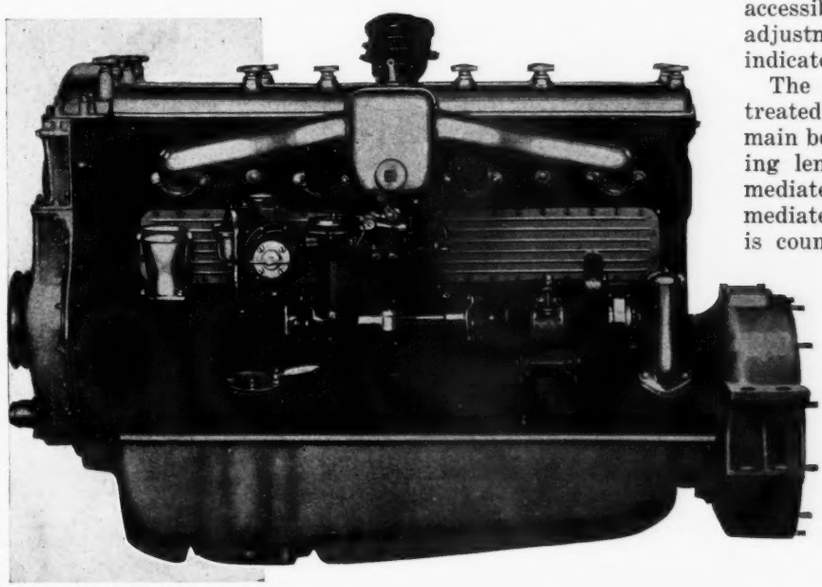
Split skirt aluminum alloy pistons are used, with three compression and one oil ring, all above the pin. The connecting rods, which are 9¾ in. long from center to center, also are of aluminum alloy, and have a rounded I section. A specially designed bolt insures bearing alignment. The piston and rod assembly weighs 3¾ lb.

The lower half of the crankcase is a heat-treated aluminum casting, with deep cooling fins the entire length of the bottom, both inside and out. The gear-driven oil pump is placed at the center of the sump, and has a capacity of 22 gal. per minute.

On the right side of the engine, in an easily accessible location, are found the oil pressure adjustment, drain cock lever and the oil lever indicator. The crankcase capacity is 3 gal.

The drop-forged crankshaft, of double-heat-treated chrome nickel steel, is mounted on five main bearings 2¾ in. in diameter of the following lengths: Front, 3 5/16 in.; first intermediate, 1⅞ in.; center, 2⅜ in.; rear intermediate, 1⅞ in., and rear, 2⅞ in. The shaft is counterweighted and statically and dynamically balanced.

A special feature of the crankshaft assembly is the mercury vibration damper developed by Mr. Duesenberg. It consists of two cartridges, approximately 2 in. in diameter and 3¼ in. long, each containing 16 oz. of mercury. These cartridges are secured to the cheeks of the shaft. Mercury, by reason of its specific gravity-viscosity relation, responds more to any disturbance than any other known element, and any vibrations set up in the shaft are damped



Intake side of Duesenberg engine. It has four valves per cylinder

The dash of the Duesenberg is a heat-treated aluminum casting

out almost instantly by the movement of the mercury in the cartridges.

Oil is strained on entering the pump, through the usual sediment screen, and again after leaving the pump, through a Purolator. In addition to these precautions, the crankshaft has ducts drilled in it which retain any foreign matter that may pass through the two strainers.

All main, connecting rod, piston pin, camshaft and chain sprocket bearings, as well as all accessory drives, are lubricated under pressure.

A duplex 1½ in. Schebler carburetor is used, in conjunction with a double down-draft intake manifold, the outer section of which feeds cylinders 1, 2, 7 and 8, and the inner section, cylinders 3, 4, 5 and 6. The carburetor is designed to supply a mixture insuring efficient operation at 2 m.p.h. as well as at 120 m.p.h.

Fuel feed is by syphon-type pump, and is in direct proportion to engine speed. The pump is fitted with a priming handle, which also serves the purpose, in service work, of indicating to the mechanic whether the setting is for too lean or too rich a mixture.

The inlet manifold has a hot spot. Two passages through the engine block between cylinders 4 and 5 carry gases from the exhaust manifold on the opposite side of the engine to the hot spot and back again. The flow of the hot gases is controlled by a thermostat on the right side of the cylinder block.

Not only the exhaust manifold, which is chromium-plated, but also the exhaust pipe immediately attracts the eye, the latter on account of its unusually large diameter, 4¾ in. It is connected to the cast manifold by a flanged joint having 12 ⅜-in. bolts. This joint is believed to be absolutely leak-proof.

The reason for using so large an exhaust pipe is that this was found to be the only means of keeping down the back pressure, and it was also found necessary to design a special exhaust muffler in order to muffle the exhaust effectively without too much back pressure. The muffler is 54 in. long. As the gas rushes into the muffler, it strikes an angular baffle plate, through which large holes are drilled. Passing through these holes, it strikes a second baffle plate without holes, and is deflected against the radiation surface of the muffler. There is a small passage left between this baffle and the wall, through which the gases enter the next section. There another drilled baffle is encountered, then one which is not drilled, and so on. The holes through the drilled baffles decrease slightly in size as the gases progress toward the outlet. Another feature of the new muffler is its ability to cool the exhaust gas. The outer wall is made thin purposely, so that the air sweeping over the muffler rapidly abstracts the heat of the gases. Two tail pipes are provided.

Large Capacity Starter

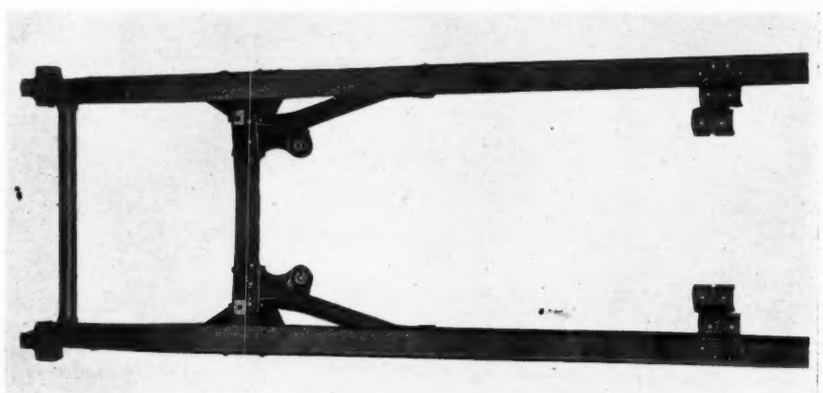
A special large capacity Delco-Remy starter is operated by a button on the instrument board, and is engaged by inertia. The Delco-Remy generator differs from the conventional design in giving a greater output at low speeds. The distributor is of the double cam and breaker type; it is mounted at an angle on top of the engine and is driven by bevel gear from the intake camshaft. An 180-amp.-hour Exide battery in a box under the right splash apron completes the electrical equipment.

The frame of the new car probably is one of its most outstanding features. Made up of 7/32 in. stock, the side rails are 8½ in. deep at the center, with 2¾ in. flanges. Six tubular cross-members are provided to brace it, the largest of which is 4 in. square and the smallest 2¼ in. in diameter. The 4-in. square member is riveted and welded into the frame with 8½ by 12 in. double gussets.

Second from the front of the frame is a 2¼-in. square cross-member, curving downward, upon which the radiator is mounted. A 2-in. round, heat-treated alloy steel casting extends from each rear front spring hanger and is bolted to the second cross-member at a point about 6 in. toward the center of the frame. About the center of each of these 24-in. castings an eye is countersunk, in which the front legs of the engines are set on rounded rubber blocks.

Two trough-shaped forgings are riveted and welded to the frame on each side behind this member, to accommodate the rear engine supports, which likewise rest on rubber blocks, of a wedge shape.

The front of the frame was given particular attention, as it is Mr. Duesenberg's belief that much shimmy and wheel wobble is due to flexure of the frame. At



Front section of frame, showing how engine is supported

the rear, a double kickup is provided, allowing the body builder more leeway in the seating arrangement.

The transmission provides two silent speeds, one a direct drive and the other obtained through internal gears. With this arrangement of the gears, shifting from third to second, even at very high speeds, is no more difficult than from second to third with the ordinary transmission. As noted previously, a top speed of 89 m.p.h. is attainable in second gear, so that a wide margin over that needed for "get away" is available in the speed of the second gear.

The transmission case is made of aluminum and heat-treated. A two-plate clutch with spring damping feature is used.

Hypoid gears are used for the final drive to obtain a low center of gravity. A No. 311 annular ball bearing takes the radial load on the pinion, while a No. 310 bearing at the forward end of the pinion shaft takes thrust loads in both directions. The pinion shaft is of tubular design and splined on the inside. The differential carrier is a duralumin casting.

The rear axle is semi-floating and has 2 3/16 in. tubular shafts. The use of tubular shafts not only cuts down the weight but also allows of using larger and more splines. The shafts are made of alloy steel, machined inside and out, and carried in a pressed steel, banjo-type housing. They are fitted with No. 311 annular bearings at the outer ends and No. 212 single and double at the differential. Wheel hubs are drop-forgings, and are machined for lightness, so they weigh about half as much as those of the ordinary large automobile.

Axle and Transmission Ratios

Rear axle ratios range from 3½ to 1 to 4½ to 1. Transmission ratios are: Low, 2.48 to 1; reverse, 2.98 to 1; second, 1.39 to 1.

The torque tube incorporates a cast-aluminum yoke and is supported from a central cross-member of the frame on rubber blocks. It carries the driveshaft, and the drive line includes two metal universal joints.

An I-beam drop-forging is used for the front axle, with reverse Elliott ends. The knuckle pins are carried almost to the center of the wheel, while the spindles are unusually large and are fitted with a No. 405 annular ball bearing at the outer and a No. 309 at the inner end, the latter lying in the center plant of the wheel. One degree of camber is used, 2½ deg. of caster and a toe-in of ⅛ in. on each side.

The front springs are 41 in. long by 2½ in. wide, while the rear springs are 62 in. long and 2½ in. wide. Both sets have large bronze bushings, and the shackle-pin bearings are protected by housings that keep out dirt and water and retain the oil supplied by the automatic chassis lubricating system. All springs have polished leaves and are enclosed in oil and dirt-proof covers. A Lovejoy two-way shock absorber is engineered into the frame at all four spring points.

Duesenberg aluminum alloy piston and rod

Internal hydraulic brakes are continued, but they have been improved by increasing the leverage and providing larger drum cooling fins. The drums are steel forgings, 15 in. in diameter and 3 in. wide, and are entirely covered by fins. Only one adjustment is necessary to keep both of the cast aluminum shoes properly applied.

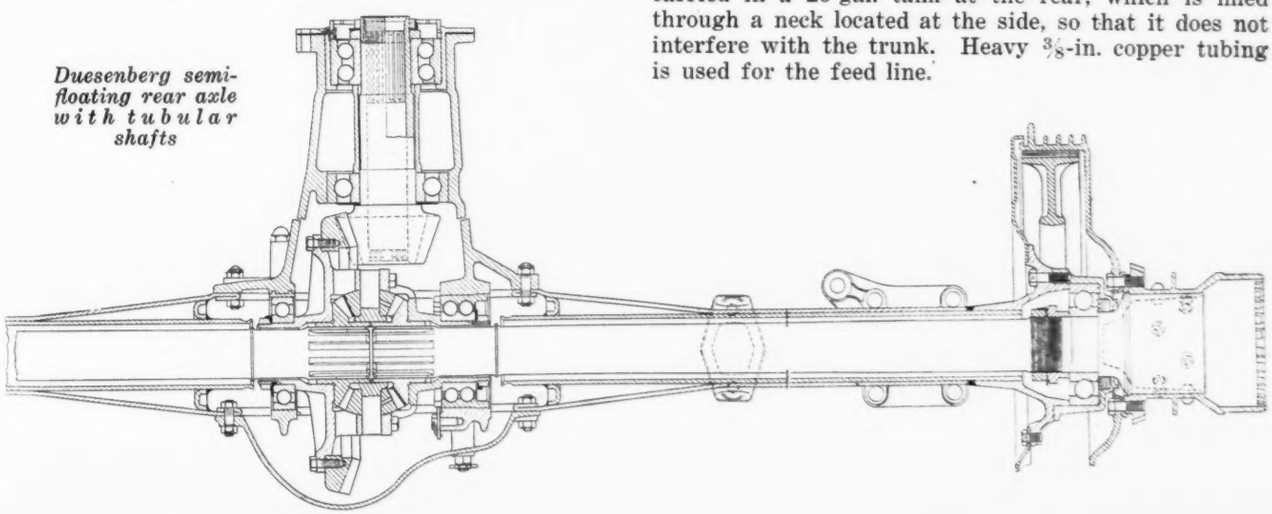
The emergency brake drum, 8 in. in diameter and 3 in. wide, is mounted on the propeller shaft, immediately behind the transmission, and operated by a substantial hand lever.

Six 19-in. wheels with 6-in. rims and tires are furnished with each chassis. Chromium plate is the standard spoke and rim finish on all chassis, unless otherwise specified. The two extra wheels are carried at the sides of the car on hangers mounted on the frame, the tires extending into fender wells, but not resting therein.

All chassis bearings are lubricated by an automatic system that supplies a quantity of oil every 75 to 80 miles, metered according to the amount required by the individual part. An automatic spring release is mounted on the fuel pump housing, and the engine "shoots" oil to the chassis bearings at regular intervals independent of the driver's memory. The fuel pump, automatic oiler and generator are driven by shaft from the accessory front drive chain.

A series of lights on the instrument panel show whether or not the oil pump is working, and when the tank supply is exhausted. Another set of lights on the instrument panel tells the driver to change his oil when 700 miles has been driven, and to fill his battery with distilled water every 1400 miles. The fuel supply is carried in a 26-gal. tank at the rear, which is filled through a neck located at the side, so that it does not interfere with the trunk. Heavy ⅜-in. copper tubing is used for the feed line.

Duesenberg semi-floating rear axle with tubular shafts



The cooling system has a capacity of 7 gal. The radiator is made of copper cartridge tubes and is of the honeycomb type. It is slightly V-shaped. A thermostat is fitted in the casting at the top of the radiator.

Chromium plate over nickel is used to finish the heavy stamped shell, while a very large filler cap completes the ensemble. No name plates or monograms are visible on the outside of the car.

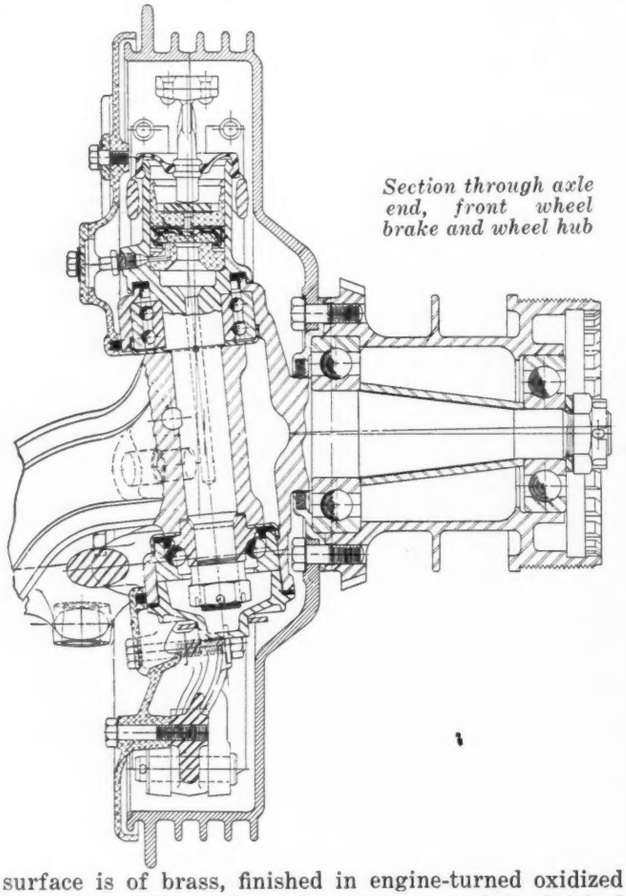
A Ross cam-and-lever steering gear is used, with a ratio of 18 to 1. The wheel is of large diameter but has only three spokes and the thin-grip-type of rim. With only three spokes the instruments on the panel in front of the driver are better visible.

The plane of the wheel is nearly parallel with the instrument board. The wheel itself is enameled black, and it has the black and silver controls mounted in the center. The controls, which include the spark and throttle and the lighting switches, are in the form of buttons, rather than of levers.

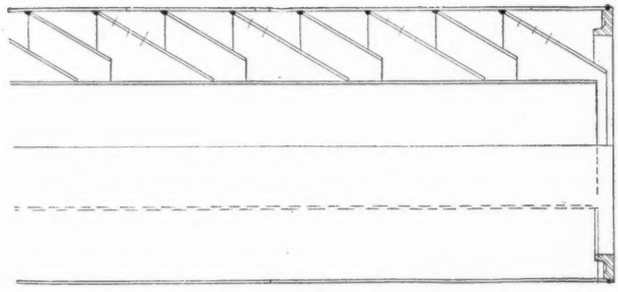
Dash Made of Aluminum

The dash is another of the unusual features of the car. It is made of heat-treated aluminum, and the toe board mountings are cast integral with it. Two oval-shaped, hollow aluminum castings extend from the rear of the dash to support the instrument panel. The castings are about 15 in. long, and in addition to serving as an instrument board support, they contain all the wires and cables for the instruments, thus insuring a rigid mounting of the instrument panel on the chassis independent of the body, making all electrical connections accessible and sightly.

The instrument panel is out of the ordinary. Its surface is of brass, finished in engine-turned oxidized chromium. The entire edge of the panel is finished with a chromium-plated polished strip. All instruments have black dials with white indicators and numbers, which combination Duesenberg believes easiest to read.



Section through axle end, front wheel brake and wheel hub



Sectional sketch of Duesenberg muffler

Among the instruments to be found on the panel are a 150 m.p.h. speedometer, a 5000 r.p.m. tachometer, water temperature gage, brake pressure gage, ammeter, gasoline gage, altimeter, starter button, carburetor choke, ignition lock, and the oiler, oil change, and battery water lights previously referred to.

Headlamps and parking lamps are made by the Indiana Lamp Corp. to Duesenberg specifications and are designed to harmonize in appearance with the rest of the automobile. A slight variation of the Duesenberg crest shown on the top of the radiator is worked into the top shell of the headlamps.

Another original design is the combination stop and tail-light. In appearance it resembles the headlamps, and it combines a ruby lens for a stopping signal and tail-light, and a bright white lens for reversing.

Front fenders are unusually wide; they have the Duesenberg crest stamped into the front crown, and sweep back in a long curve to a point past the center of the car. The short, walnut-finished running boards are stripped with chromium-plated sections running longitudinally. These strips also extend up on the rear fenders almost to the crest, in a pleasing design. The walnut edge also is fitted with a chromium-plated strip to carry out the fender contour.

Among the exterior fittings that are chromium plated are the radiator shell, headlamps and headlamp tie rod, front and rear bumpers, cowl lights and cowl bead, wheels and hubs.

Two wheelbases are offered, one of 142½ in. for bodies seating five passengers or less, and another of 153½ in., for seven-passenger styles. The chassis is delivered with four fenders, running boards, hood, bumpers, six tires and wheels mounted, and full de luxe equipment at $8,500 f.o.b. Indianapolis.

A COPY has been received of Deutsche Kraftfahrzeug-Typenschau (German Motor Vehicle Specifications), Part III, covering passenger vehicles, inclusive of buses and motorcycles, the publisher being C. W. Erich Meyer, Dresden. The specifications are arranged somewhat on the order of the Handbook of Gasoline Automobiles, with a photograph of the model at the top of the page and two columns of specifications below it.

THE Compressed Air Society, 90 West St., New York, has recently issued the third edition of its Trade Standards. The pamphlet gives information under the following headings: Nomenclature and Terminology, Definitions, Standard Test Practice, Standard Capacities and Pressures, Compressor Speeds, Installation and Care of Air Compressors, Lubrication of Air Compressors, Portable Compressors, Data, Tables, Formula, Pneumatic Tool Standards, Trade Policy and Some Uses of Compressed Air.

German Factories *Turning* Out *Americanized* Designs

Berlin Show also reveals that prices have been brought down sharply in effort to meet competition of U. S. cars. New eights are numerous among exhibits.

By Edwin P. A. Heinze

THE international automobile show held in Berlin Nov. 8-18 covered every type of automotive product with the exception of motor boats and aircraft. Stands covered more than 242,000 sq. ft. The public came in such numbers that the gates had to be closed for hours on end several times.

During the two years that have elapsed since the last passenger car show in Berlin, German makers have worked determinedly, and now appear to have caught up to the international standards set up by American makers, for the latter are the most feared competitors on the German market. The German industry has Americanized its models to such an extent that in point of appearance there is nothing to choose between German and American cars. But the most striking fact is that German prices have come down to a competitive level in spite of a further drop in import duties.

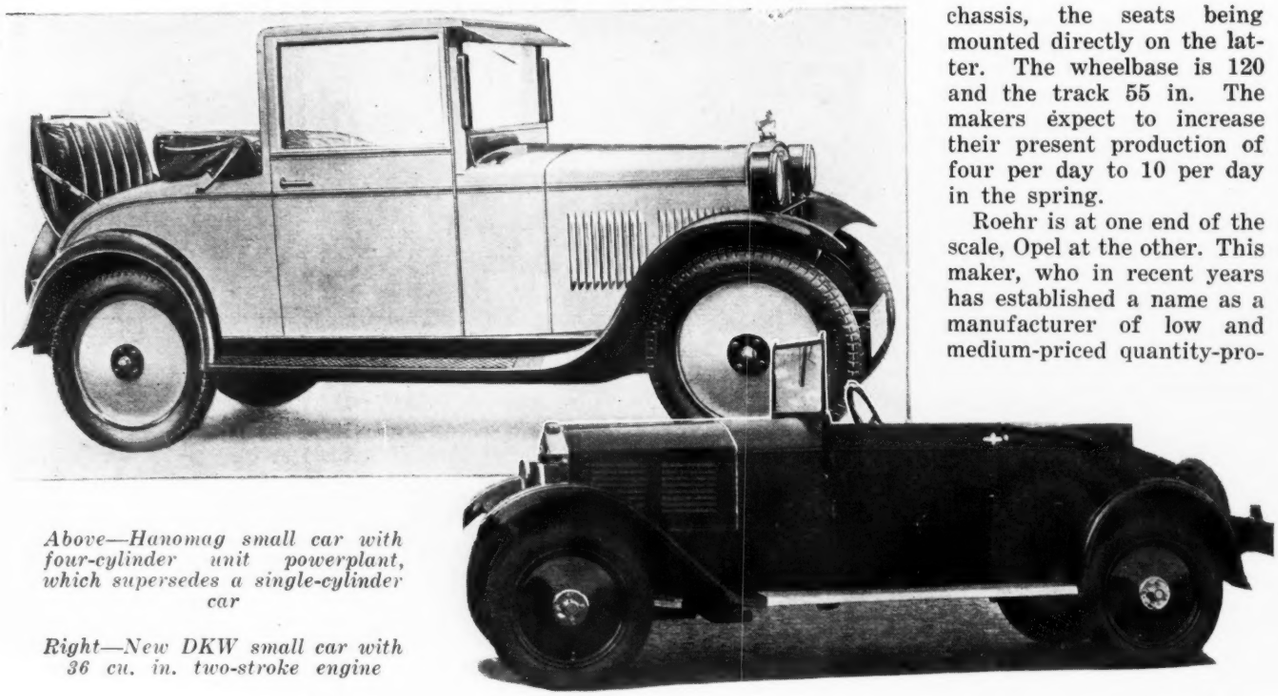
Out of 54 exhibitors of passenger cars, no fewer than 30 showed imported vehicles, which indicates that the German industry will be up against stiff competition. Foreign car manufacturers exhibiting their products include 17 American (counting General Motors firms as one), five French, two Belgian, three Italian, two Austrian and one Czechoslovakian.

The main German development is the introduction of many new eight-cylinder cars, which appears rather unwarranted in view of the limited German market for this class of vehicle. No fewer than 11 new machines of this type were shown, and some of them are offered at remarkably low prices, well under $2,000. They all have the cylinders in line, and the piston displacements range from 134 cu. in. in the new Roehr to 366 in the latest Opel, which sells in the chassis form at $3,343. All of the more important productions in this class have L-head engines.

The most noteworthy of the new German eight-cylinder cars is that produced by the Roehr company, which latter was organized only two years ago and is producing a car that looks like very good value at $1,900. The car has independently swinging axles and is exceptionally light, for with a closed body seating four to five passengers and completely equipped, it weighs only 2200 lb. It is built very low, the floor lying below the frame, which is of wholly unorthodox design. The side members, which are box girders of cold pressed steel, not only constitute the chassis frame but also serve as the main frame for the body. The floor and running boards are secured to the bottom of these frame members, which are spaced further apart than in the usual designs. This arrangement stiffens the whole structure, and the whole frame is on one level, without the usual kick-up, which is made possible by placing the rear axle behind the rear seats. The differential drive is by David Brown worm gear, and despite the lowness of the floor the ground clearance is 10 in.

General view of exhibits at 1928 German automobile show

Cantilever springs are employed at the rear, and propulsion is through torque arms. There is no front axle in the ordinary sense, the two axle ends being connected by two parallel transverse springs, one above the other immediately under-



Above—Hanomag small car with four-cylinder unit powerplant, which supersedes a single-cylinder car

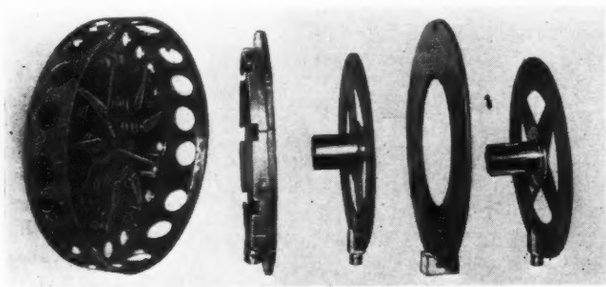
Right—New DKW small car with 36 cu. in. two-stroke engine

chassis, the seats being mounted directly on the latter. The wheelbase is 120 and the track 55 in. The makers expect to increase their present production of four per day to 10 per day in the spring.

Roehr is at one end of the scale, Opel at the other. This maker, who in recent years has established a name as a manufacturer of low and medium-priced quantity-production cars, is now presenting the largest and most expensive model in the eight-cylinder class. The engine has a bore of 3.5 and a stroke of 4.72 in., giving it a displacement of 366 cu. in. The valves are arranged side by side and the camshaft is in the crankcase. It is driven at the front end by a roller chain partly submerged in oil. The compression ratio is 5.3 to 1 and the normal output is 95 hp. at 2400 r.p.m. while the maximum output is 110 b.hp. at 3300 r.p.m. Cast-iron pistons are employed. An oil cleaner is provided. Crankcase material is silumin. Two carburetors and dual ignition are provided. The clutch is of the dry multiple plate type and it and the three-speed gearset are combined with the engine, which has rubber mountings.

neath the radiator, which has a dummy extension covering the upper spring. Each spring has two main leaves. The steering gear is of the rack and pinion type, similar to that employed by Sizaire Freres; there is no tie-rod between knuckles. Although the reduction ratio of the steering gear is only 6.8 to 1, it is claimed that road shocks are not transmitted to the steering wheel.

The eight cylinders are cast in one block, together with the upper part of the crankcase. The bore is 2.36 and the stroke 3.39 in., and the resulting piston displacement of 134 cu. in. is the smallest in German eight-cylinder cars, the power output being 45 b.hp. Chrome nickel steel is the material used for the crankshaft, which has nine babbitted main bearings and is fitted with counterweights and a vibration damper. The camshaft in the crankcase is driven by fabric gears. Valves are in the head, and the rocker arms are pressure-lubricated, the same as the main bearings. A dry multiple disk clutch trnsmits the power to the three-speed gearbox, which is flanged to the engine. Auto-Lite battery ignition is employed and the cooling water is circulated by pump, a thermostat being included. Hand-operated shutters are part of the equipment, which is very elaborate. Two levers on the steering wheel operate the headlights and direction indicators. The fuel tank is mounted between the instrument board and the dash. The body is built in accordance with the French Aerable patents and virtually forms a hood over the whole



NAG—Protos centrifugal clutch

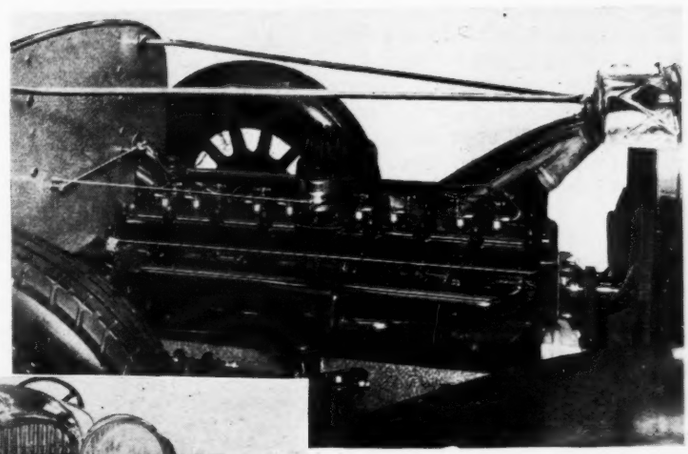
Maybach Overspeed Gear

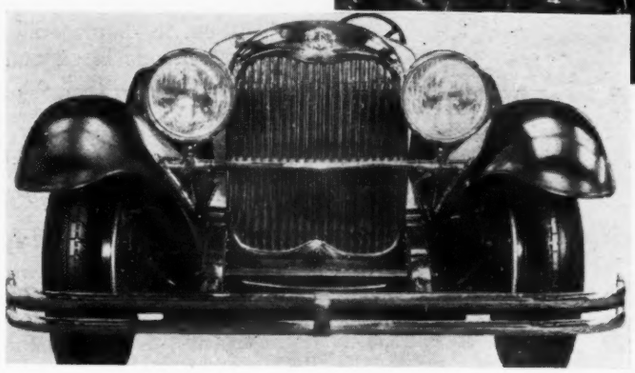
A Maybach overspeed gear, which is adopted in numerous German cars of all classes, is fitted behind the gearbox. The hollow transmission shaft has two fabric joints and the final drive is through spiral bevel gears, the reduction being 4.5 to 1. A worm and sector steering gear is employed. Springs are semi-elliptic all around, and, as in many other German cars, are fitted with rubber shock insulators. The axles also are rubber-insulated. Rubber is used, moreover, for the radiator and body mountings. Hydraulic shock absorbers and brakes are employed, and two hydraulic jacks are fitted to each axle near the wheels. They are connected up to a system of pressure pipes by flexible metal tubes and one, two, three or all four wheels may be jacked up simultaneously.

Other new German eight-cylinder cars are the Mercedes-Benz "Nuerburg," which was shown at London and Paris, and the Audi, which has a piston displacement of 280 cu. in. and an underslung worm-gear drive. Magneto ignition is adhered to and a tire pump is incorporated in the gearbox. The chassis has 26 points requiring lubrication, and a Bowen central system has been adopted. This car also has an L-head engine. The radiator has thermostat-operated shutters—a fitting still rare on German cars. The Adler eight is another new car, with an L-head engine of 244 cu. in. displace-

ment. Bowen one-shot lubrication and hydraulic brakes are provided. The limousine sells at $3,000. The Mannesmann company has introduced three new eight-cylinder cars, two with a piston displacement of 152 cu. in. each and the third with 317 cu. in. One of the smaller engines is for a sports car and can be had with a supercharger, which increases the power from 55 to 77 hp. The valves, operated by pushrods, are in the head and a special oil cooler is provided. The cylinders are cast in two blocks. All models have Maybach overspeed gears.

Stower has two eight-in-line models of 152 and 244 cu. in. displacement respectively, with L-heads and block-cast cylinders and crankcase upper half. Rubber shock insulators and hydraulic brakes are features of the equipment. The generators and water pump are coupled in tandem and belt-driven. A separate belt drives the fan.





Above — Eight-cylinder Opel engine

Left — Front view of Opel's new eight-cylinder Regent model

Another German eight-cylinder car is the Hansa, which is fitted with a Continental engine and also has a Maybach overspeed gear.

Previous to the show there were two German eight-cylinder cars on the market, and these have not been altered much. They are the Hansa-Lloyd, which has an aluminum engine with steel liners, and the Horch. Both have overhead camshafts and Maybach overspeed gears. The Horch was exhibited at recent foreign automobile shows and the company has obtained good export connections. The displacement of the Horch engine has been increased to 244 cu. in. and it now delivers 80 b.hp. A Bosch-Dewandre vacuum brake and a Bijur central chassis lubrication system are among the items of equipment.

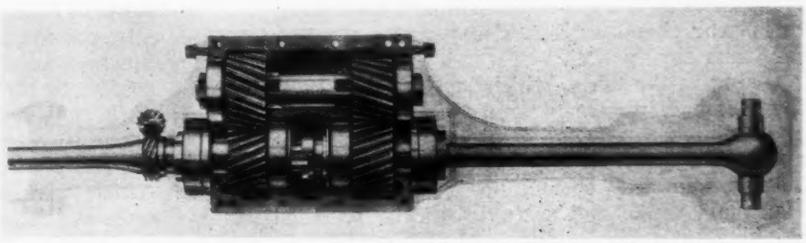
Six-Cylinder Engines Popular

During the last two years six-cylinder engines have become very popular. American competition is keenly felt, and as American cars appeal to the public mainly owing to their inherent comfort and the flexibility of their engines, German makers try to bring out models in every respect similar to these. It is for this reason that engine displacements are being increased and that such chassis improvements as rubber shock insulators, central chassis lubrication systems, hydraulic brakes, etc., are being widely adopted. According to statistics just published by the Association of German Automobile Makers, out of a total of 95 models made by its members, 28 have a piston displacement of between 183 and 244 cu. in., which is substantially the displacement range of the American cars selling in considerable numbers in Germany. But there are also 28 models with displacements ranging from 61 to 122 cu. in., this being a field that is not being catered for by the American makers.

Six-cylinder engines now predominate largely in German models, no less than 52 of which are fitted with them. These cars are being offered at prices that compare favorably with prices asked for such American cars as the Pontiac, Oldsmobile, Oakland, Durant, Chandler, Chrysler, Dodge and Studebaker (all of which were at the show), although some of these have larger displacements. Brennabor has a line of 183 cu. in. cars at between $1,600 and $2,000. NSU is offering 103 cu. in. cars at less than $1,500. Wanderer is selling 152 cu. in. cars at $1,900; Dixi, cars of similar displacement at not quite $1,400. The Adler, with a displacement of 177 cu. in., is $1,780. These prices are all for limousines of more or less similar equipment and the makers mentioned are all among the bigger producers in Germany. Besides them there are a number of smaller makers of six-cylinder cars at prices ranging around $3,000, including Selve, Elite and Simson. Maybach, of course, also is one of the small makers, but the product of this company is in a class by itself, for it is an out-and-out luxury car.

A special position among German makers is occupied by Opel, who sprung a great surprise on the others by some ruthless price cuts. This maker now offers a 122 cu. in. six-cylinder sedan at slightly over $1,000, i.e., at about $100 less than the price at which the Ford and Chevrolet sell in Germany. Some other Opel cars also are exceptionally low-priced, a 225 cu. in. six-cylinder sedan, for instance, being offered at $1,500.

A newcomer in the six-cylinder field is the Aga com-



Maybach auxiliary overspeed gear

pany, which at one time belonged to Stinnes. It is building a very normal car using a 150 cu. in. American engine with a bore of 2.68 and a stroke of 4.49 in. The chassis has pressure gun lubrication.

The Maybach overspeed gear is also fitted to numerous six-cylinder cars, even some in the medium-priced class, and it is decidedly an asset to the German idustry. It is a self-contained unit and can be fitted to standard cars at an extra cost of about $150. A description of this gear has appeared in *Automotive Industries*. In the gearset used on the large 427 cu. in. Maybach

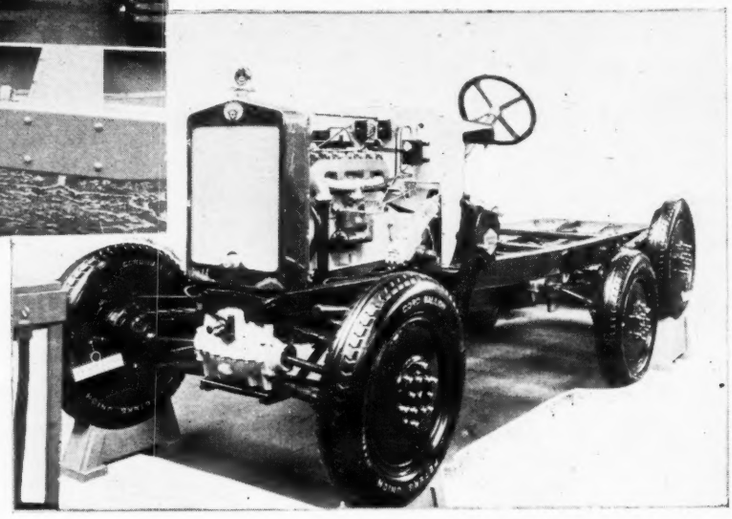
Above—Front end of chassis of the new eight-cylinder Stoewer

car the driven shaft is geared up 1 to 1.96. An especially important feature of this gear, which constitutes an improvement on other overspeed designs, is that it can be shifted without touching the clutch. The shift lever does not operate the sliding clutch member directly, but loads a spring. The clutch itself is connected to the accelerator pedal and is fixed by same in whatever position it is in, as long as the pedal is pressed down. But immediately this is released, the loaded spring will push the clutch into the opposite gear. The clutch surfaces will glide on one another until synchronism is established and then engage. This takes only a fraction of a second. This unit can be had in casings of various forms to be fitted into the propeller shaft assembly or to be flanged to the gearbox.

Another innovation at the German show was an automatic clutch developed by the NAG-Protos company. It is fitted to the flywheel and is operated by the centrifugal force of six weights, in combination with levers. The clutch itself is of the dry disk type, and it is adjusted so that it will engage as soon as the accelerator is pressed and the engine picks up. This not only facilitates gear changing, but also permits coasting of the car, thus saving fuel.

Owing to the taxes, which in Germany are levied on the piston displacement, and the expense of garaging and maintenance, which also vary with size, cars up to and round about 61 cu. in. are in great favor. This market was first opened up by the little two-seater Hanomag, which had a single-cylinder, vertical water-cooled, four-stroke engine in the rear part of a somewhat queer-looking body. This was followed by the small Dixi, built under license of the British Austin-Seven, which latter has given the small car movement in Germany a powerful impulse, because it created a taste for miniature motor cars with the features of bigger cars. The Berlin show clearly reflected this development. A few months previous to the show the Zschopauer Motorenwerke, who claim to be the largest producers of motorcycles on the Continent, brought out a neat little car of the roadster type. In respect to bodywork this constituted an improvement over the Dixi, in which the seating accommodation always was somewhat cramped. This car, known as the DKW, is now being produced at the rate of 15 a day. It has a water-cooled, two-cylinder, two-stroke engine of 43 cu. in displacement, the cylinders being cast in one block and having a three-speed gearbox flanged on. It is equipped with

Below—Selve six-cylinder front drive car (Voran front drive)



generator-battery ignition and starter. The crankshaft runs in roller bearings. The engine is a normal three-port type and takes in combustible mixture via the crankcase, which is divided into two sections. The division wall carries the central main bearing, which is made gas-tight by means of felt-disks. Lubrication is effected by the usual plan of mixing oil with the fuel. The car has no frame, the body itself carrying the engine and transverse springs. The body is made of three-ply wood, which is impregnated to make it fireproof. The outside is covered with imitation leather, giving it the appearance of a Weymann body.

This unique little car has been followed up by the makers with a more pretentious one having two cylinder blocks arranged in a V. It also works on the two-stroke principle but does not use crankcase compression. Each block has three cylinders, one of which forms a double-acting feed pump. The displacement is 61 cu. in. The car is a comfortable four-seater sedan, with a body similar to that on the smaller car. The price is $950, while that of the smaller one is $500.

The Hanomag company has given up the single-cylinder car referred to and replaced it by a four-cylinder vehicle with a displacement of 45.7 cu. in., about the same as that of the Dixi. It has a conventional powerplant with vertical L-head engine, detachable head, battery ignition, and three-speed gear box.

S. A. E. *Production Meeting*

(Continued from page 789)

divergences ranging from 0.2 hp. to 1.0 hp. for cast iron and from 0.5 to well over 2.0 for ordinary steel, and that the only real and satisfactory check of actual power requirements is a recording watt-meter check or something of a similar nature.

During the discussion a question also had come up regarding the relationship of cutting tool shapes to horsepower requirements. Mr. Nichols stated that the A.S.M.E. was at present working on this and found that very little seemed to be known and that most tool grinders were still using the old Taylor angles.

In answer to a statement that the small pulleys in prevalent use today, with their small arc of contact, must have a poor effect on power transmission, Mr. Nichols stated that the tool manufacturer should not be blamed for this, but rather the purchaser of high speed equipment.

Mr. Woodbury's paper on chain drives proved to be a comprehensive study of existing types, dealing with their various design and application features from a point of view of desirable standardization. Among the most interesting statements in the discussion was that by F. L. Morse, president, Morse Chain Co., who said that there were entirely too many different types of chains in use at present and that simplification was certainly desirable. "If all that Mr. Woodbury has said, about lubrication, accuracy requirements, needed cooperation, and so forth, is true," stated Mr. Morse, "we ought to get to work and give the industry something that is easy to apply and simple in design. Twenty years ago we thought we had reached the limit of development of chain drives. Now I know we don't know anything."

The high points of Mr. Woodbury's paper follow:

Silent chain joints can be divided into two classes according to whether they have a sliding action, like a plain journal bearing, or contain two members that rock on each other. In these two major classes there are numerous variations, as various makers have attempted to improve the efficiency of their product by detail design changes.

In action, a silent chain is not smooth like a belt on a pulley, but the chain rises and falls, this rising and falling becoming less as the number of teeth in the sprocket is increased. Chains of short pitch are usually quieter and smoother in action than chains of long pitch running at the same speed.

With relatively slow speed chains it sometimes is of value to lay out a drive so that the free length of the chain between sprockets is exactly an even number of pitches. This causes the chain to rise and fall on the two sprockets simultaneously, transmitting more nearly uniform motion to the driven sprocket.

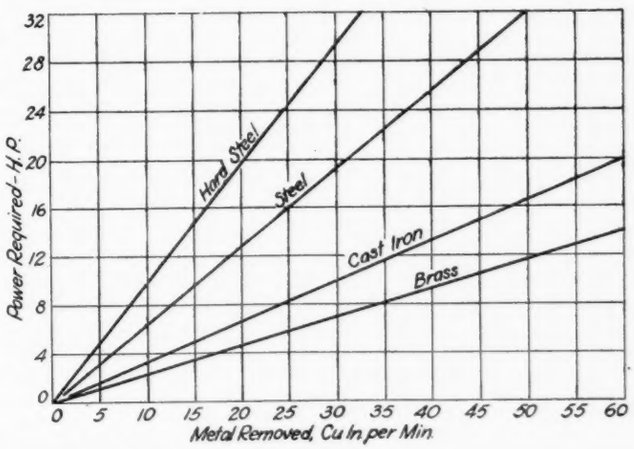


Chart for determining horsepower required by machine tools

It is best wherever possible to use an odd number of teeth in the smaller sprocket because each pitch of chain makes contact with only one-half of the sprocket face and the next pitch makes contact with the other half. If there is an even number of links in the chain, as is advisable in industrial chains, and an even number of teeth in the sprocket, all wear will be sustained by one-half the sprocket face.

Nearly all types of silent chains have certain characteristics which especially fit them for particular application. The sliding type of joint appears to be advantageous where lubrication will be ample. The rocking type joint develops less friction and therefore may be called for in exceptionally high speed installations, especially when the chain length is short and the sprockets are small.

Under the chairmanship of Guy Hubbard, National Acme Co., the final session of the meeting developed some very interesting discussions on production records, time study and new metal cutting alloys.

In his paper on the interpretation of production records, Paul Geyser, General Motors Truck Co., pointed out that the subexecutives of an organization, to a large extent, make or break its success. As they are good business men so will their efforts tie up more closely with the aims of the management. Mr. Geyser believes there is no better way of making good business men out of such subexecutives than to give them responsibility for certain results, provide them with the necessary authority to obtain those results and supply them with records from which they themselves can determine the effectiveness of their efforts. Such a plan was placed in operation by Mr. Geyser's organization about two years ago and he showed comparative cost records which convincingly proved the effectiveness of the plan.

Time Study Broad Subject

The relation of time study to manufacturing, it was pointed out by L. W. Haskell, Dodge Bros., in his paper on that subject, is much more inclusive than is sometimes thought. Its object is not alone the determination of rates of pay for certain jobs, but it can and should be used for such diverse objects as the determination of new building plans, plant layouts, purchase of new machine tool equipment and similar items in which the rate of output per worker or per machine is an essential element.

An extra added attraction at this session was a paper on Carboloy, the new cutting alloy, by G. H. Sieger, Carboloy Co. This new material has been fully described in *Automotive Industries* (Oct. 20, 1928), but a few new points of interest were brought out.

Just Among

Graham-Paige Using "Talkies"

GRAHAM-PAIGE has gone and done it again. After staging something really new in the way of dealer meetings during automobile show time last January, the Graham brothers are stepping into the merchandising limelight again by being the first automobile company—in fact the first industrial organization—to utilize the "talkies" for sales purposes. They have just completed a talking film some 30 minutes in length which can be projected by means of portable equipment carried in three relatively small trunks. The film records talks by each of the three Grahams as well as other interesting material shown to the accompaniment of an extremely impressive musical score.

* * *

Three Brothers Heard in Film

MAYBE we're a bit overenthusiastic at the moment, as we have just come from a private showing of the film, but the faithfulness with which it records the personalities as well as the words of the three men who head the organization is so marked as to be quite impressive. The film begins with the same sort of symbolic picture as was used at the dealer luncheons last year, emphasizing the qualities of courage, loyalty and service upon which the Graham-Paige Legion is founded. Then comes a talk by Joseph B. in which he describes briefly the technical development in the company during the last 12 months and invites the dealers—for whom the film is designed—to come to a special gathering in Detroit shortly after the first of the year to see what is to be at the New York Show. Joseph is followed by Ray A. who re-emphasizes and revivifies the principles upon which the Legion is based and then discusses the future of the Graham-Paige business, while Robert B. is the final speaker. He tells of the success the organization has been having abroad and also emphasizes his hope to meet each dealer personally at the January meeting.

* * *

One of First Portable Sound Projectors

THE plan is to show the film in as many centers as possible between now and Jan. 1, primarily with the idea of building up to the special sales convention and also with the thought of bringing to as many dealers as possible a clearer feeling and contact with the men who are heading the organization whose product they are selling in the field. The equipment being used is one of the first portable sound projection machines ever produced. Only two or three such machines exist today and it is probable that no more will be available for at least another month or two.

* * *

A Practical Tool for Sales Promotion

THE local meetings are to be handled by distributors and branch managers, usually with the aid of some factory executive who will be present. Between the showing of the various parts of the movietone brief sales meetings or discussions will be held, thus making the talking film an integral, practical part of the sales promotion work. While the movietone is an entirely new stunt so far as use by business organizations is concerned, the importance of this particular film, as we see it, lies not primarily in its stunt or spectacular value, but in its obviously practical and utilitarian relation to the working out of a carefully laid sales plan. The film is designed exclusively for use among dealers and in no sense as a means of reaching owner prospects.

* * *

May Prove Useful for Retail Work

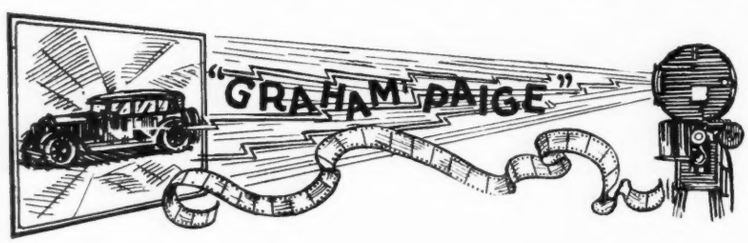
HERE again the thought strikes us that some day when the talking movie is perfected to a point where it can be packed into a small traveling case it may replace its predecessor, the portable movie, in putting across a genuine sales talk to the prospective purchaser of a motor car.

Much has been said around the sales conference tables about the fact that many a retail sale has been lost because of the poor or improper presentation of the product by retail salesmen. Should this new device come into use the day might come when the retail salesman would merely sell the prospect on the idea of letting him set up the portable talkie in his home and the talkie, in turn, would put over a sales talk in a convincing way.

* * *

Easier Said Than Done

GET a dealer who is a good business man or make into a good business man a dealer



Ourselves

which you have," said a factory sales executive to us the other day, "and all the rest of your so-called 'dealer problems' cease to be of great importance; they tend to solve themselves automatically." Certainly there's no doubt about that; but equally there's no doubt about the difficulty of making somebody into a business man who wasn't just naturally born that way. Yes, it can be done; that's granted, but it's no easy task even with the pupil working directly in contact with a good teacher day in and day out. How much more involved does the problem become when —as in the case of dealer-factory relations—contact cannot be constant and when competent teachers, in the form of factory traveling men, are extremely hard to get. Study of this whole much-talked-of matter or dealer education from a broad psychological and pedagogical standpoint would make interesting automotive reading for the cold winter nights which are about to come.

* * *

Production Control on Saner Basis

WE'VE been impressed lately with the extremely active and intense driveback toward simplification and simplicity in production control methods and forms during the last few years. To understand the production control methods of a big plant 10 years ago when the Efficiency Edgars were in their prime was a month's work for an average executive. Today, it would seem, the larger the organization the simpler the principles and methods. Records are not being kept today simply because something is available to be recorded; they are being kept only when needed to provide desired and necessary information. One man who has been in active production control work for 15 years and still is, said the other day, "You know I haven't designed a new form in three years; it used to be that a good share of my time was taken up that way." Production control today is operating along the lines of modern art; namely, it is bringing into relief just that which is essential and ruthlessly exterminating all surrounding things that are unimportant or neglible in effect. Who says the world doesn't progress?

* * *

Service Department Needs Cooperation

THOUSANDS of dollars are being saved today," said Guy Wall, president, Society of Automotive Engineers, the other night, "by increasingly better cooperation between the engineering and production departments." It's good to hear a statement of that kind from so authoritative a source. In our own humble way, we venture the suggestion that still further thousands might be saved next year by raising the service department from associate to full membership in this Cooperation Club.

* * *

Aero-Automobile List is Impressive

THE strong interest of automobile manufacturers in the growing aviation industry has long been recognized, but the list of definite connections between the two has grown so rapidly since the beginning of 1929 as to be difficult to keep up with. Probably everybody is familiar with this list, but it surprised us by its length when we wrote it out somewhat musingly this afternoon; here it is—the automobile manufacturers who are building either airplanes or airplane engines: Ford, Packard, Auburn (Lycoming), Gardner, Marmon, Velie and now Cunningham, not to mention control of Great Lakes Aircraft Corp. by Henney Motor Co. We'll guarantee, too, that the list will be longer before the next 12 months pass.

* * *

Merger Rumors Rumbling Again

AFTER a brief period of quiescence, mergers and rumors of mergers are beginning to pop up again, some of the same rumors bruited about a while back being among those looming on the present horizon. Whatever comes of the current talk of passenger car and truck company combinations, it would seem certain that 1929 will see a continuance of consolidations in the parts and accessory fields. This prediction is made partly on the sound economies which would seem to underlie some further combinations and partly on the eagerness with which various banking groups seem to be looking about the automotive pasture as a possible field for future activities. The later element usually is the match which ignites the kindling piled up by economic trends.

* * *

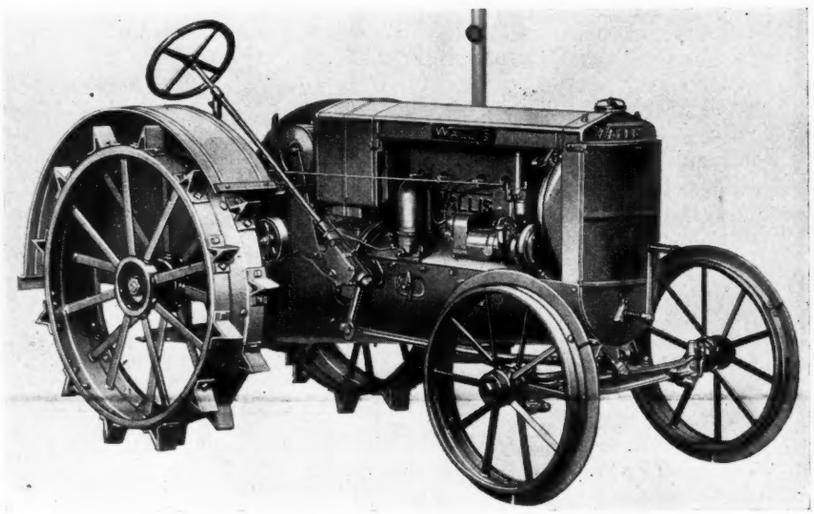
Much Can Happen in Five Minutes

READ the other day in the Flint *Daily Journal* about a man in London who walked into a broker's office after a good luncheon, bought 1000 shares at random and left instructions to sell them in five minutes. Some of us who follow tips, study financial reports and think we watch developments closely actually aren't operating much more scientifically than this gentleman; the only difference is our "investigations" help inflate our egos and make us think that we are investing intelligently .... Oh, yes, forgot to say that this particular young man lost about $1,250.—N.G.S.

Two-Plow 12-20 Hp. *Tractor* Added *to* Massey-Harris Line

Similar in design to larger Wallis model, with boiler plate frame of U-section. Four-cylinder engine of 247 cu. in. piston displacement governed to run at 1000 r.p.m.

THE Massey-Harris Co., of Racine, Wis., which now controls the Wallis tractor business, has brought out a two-plow Wallis tractor rated at 12-20 hp., as a companion model to the original 20-30 hp. three-plow tractor. The new tractor is designed along the same general lines as the earlier one and is being referred to as a smaller edition of the Wallis 20-30.



Wallis 12-20 hp. tractor, right side view

The characteristic feature of the original Wallis tractor was its boiler plate frame of U-section, extending from the radiator to the rear axle center housing. This feature is incorporated also in the new model. The engine is a four-cylinder one, of 3⅞ in. bore and 5¼ in. stroke, and thus has a displacement of 247.6 cu. in. It is governed to run at 1000 r.p.m. The cylinders and the major part of the crankcase are in one casting, but the cylinders have removable liners which are honed on the bearing surface and machined on the outside to an even wall thickness. The valves are located in the separately cast cylinder head.

Crankpin bearings are 2⅛ in. in diameter by 2½ in. in length, while the main bearings, of which there are three, have a diameter of 2⅛ in. each and an aggregate length of 9½ in. Lubrication is by a combined force feed and splash system, the oil being forced to the main and connecting rod bearings by a gear pump and filtered in the course of its circulation. Connecting rod bearings are accessible through hand holes in the U-frame.

Pistons are Light Weight

Pistons are balanced to within ¼ oz. and are of lightweight design. Exhaust valves are of special heat-resisting material. A carburetor with a single adjustment is fitted, and either gasoline, kerosene or distillate can be used as fuel. In addition to the carburetor, there is provided a vaporizer of Rodgers make, the heat supply to which can be regulated. To permit of the use of fairly high compression with the heavier fuels, water injection is resorted to for engine loads of 75 per cent and over. The water inlet valve is located on the manifold above the vaporizer and opens automatically as the engine output reaches 75 per cent. Ignition is by high-tension magneto with impulse starter, this piece of equipment being inclosed in a separate housing. Engine speed is controlled by a fly-ball type of governor. All of the air entering the carburetor passes through an oil-type of air-filter.

The radiator is of the tubular type, and the whole cooling system has a capacity of 5 gal. A 16-in. fan, mounted on taper roller bearings and driven by belt, is located back of the radiator.

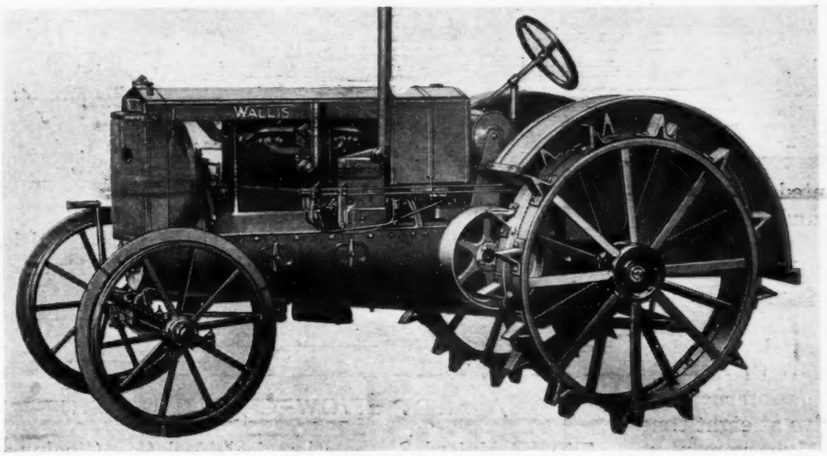
The clutch is a Twin-Disk three-plate type. It connects the engine with the transmission, which is a special Wallis design and gives three forward speeds in addition to the reverse motion. At normal engine speeds the tractor speeds at 2 1/3, 3 1/3 and 4 1/3 m.p.h., the reverse speed being the same as the low forward speed. All gears are made of drop-forgings, machine-cut and case-hardened. There is a first reduction by bevel gears, the mesh of which can be accurately adjusted by means of a positive screw adjustment. All other gears of the drive are spur gears. The strains on the differential are reduced by placing it ahead of the rear axle, there being separate drives by spur gear sets to the two rear axle shafts. The gears of the transmission run in a bath of oil, which affords abundant lubrication not only to the gears but to their bearings as well. A feature of the design is that the differential bevel gears and the master pinions and gears can all be reversed (by interchanging the two of each kind), so that the pressure is taken on that side of the tooth

which is normally not under pressure. This should give considerably increased gear life. Ball and taper roller bearings are used in the transmission.

A detachable belt pulley comes with the tractor. It is 17 in. in diameter and has a crowned face 6 in. wide. The pulley is balanced. It runs at 540 r.p.m., which gives a belt speed of 2400 ft. p. m. Belt power is transmitted through a single pair of gears only.

The rear axle is mounted on taper roller bearings. The driving wheels are 44 in. in diameter and have a face of 10 in. The rims are flanged and are supported by substantial spokes. Two-bolt steel, heat-treated spade lugs and adjustable wheel scrapers are regularly supplied, but extension rims are extra. Front wheels are 28 in. in diameter and have a 5-in. face. The steering gear is of the regular automotive type and is inclosed in a dust-proof case. The tractor is regularly supplied with substantial fenders.

With a wheelbase of 78 in. and a tread of 45 in. the



Left view of Wallis tractor

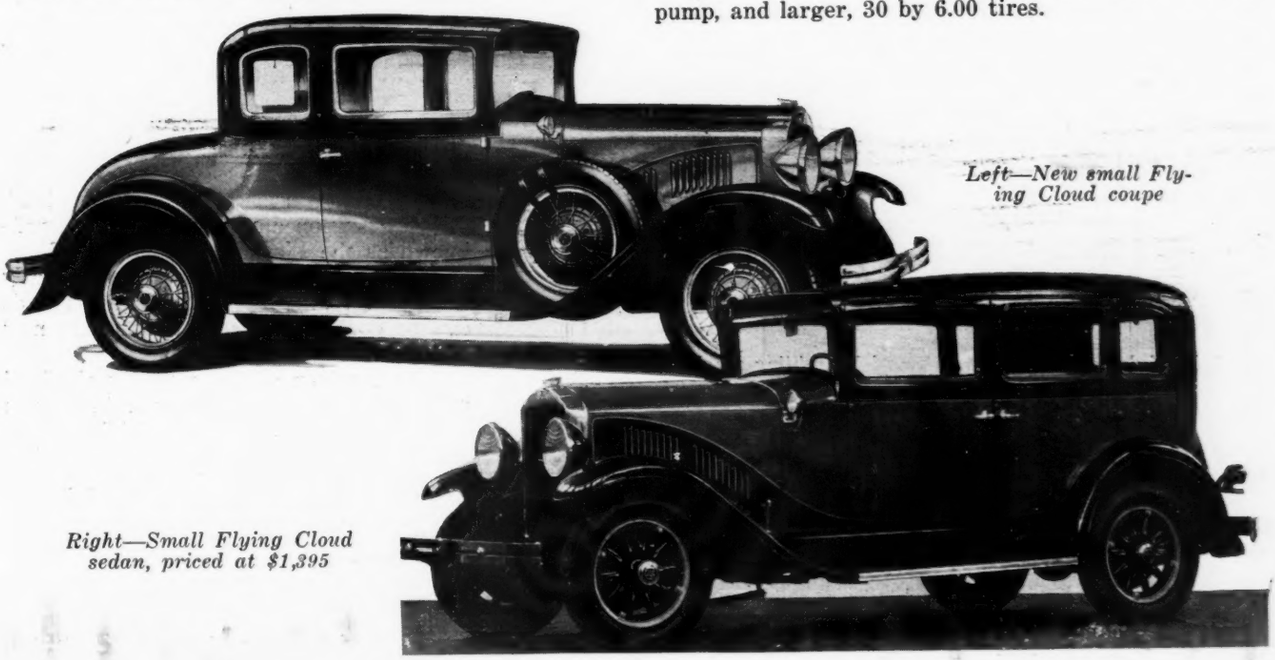
Wallis 12-20 tractor has a shipping weight of 3250 lb. Its over-all length is 121 in. and its over-all height, 51 in. The fuel tank holds 15 gal. and a reserve of 1¾ gal. can be carried in an auxiliary tank. The vaporizer water tank also holds 1¾ gal. The tractor can be turned in a radius of 11½ ft.

Reo Announces Smaller Flying Cloud

A SMALLER Flying Cloud is announced by the Reo Motor Car Co., in two body models, a five-passenger sedan and a two-passenger coupe. The sedan lists at $1,395 and with de luxe equipment, including six wire wheels, fender wells and trunk rack, sells for $1,495. The coupe is available either with or without rumble seat. The price of this model has not as yet been announced.

Bodies are by Murray and, as far as appearance is concerned, are not reminiscent of any other car on the market at the present time, as may be gathered from the accompanying illustrations. Among the new body features the most unusual innovation is the depressed panel which curves down across the hood and along the base of the body panels. The radiator, while following modern lines in its emphasized depth and decreased width, is also individual in appearance. The high waistline of the car, deep roof, with the roof covering extending down to the drip molding, and U-shaped trimmed moldings around the windows, further add to the individual appearance. Chrome-plating is used throughout for exterior hardware and the instrument board carries temperature and gasoline gages in addition to the usual instruments. Interior moldings and the dash have a walnut finish.

While the car appearing on the salesroom floor thus will be entirely new in conception, the chassis and mechanical units from the Reo Wolverine have been adopted. This move provides the smaller Flying Cloud with a chassis of high performance characteristics and well-tried individual mechanical design. A number of improvements have been made here also, including the adoption of four Lovejoy shock absorbers, AC fuel pump, and larger, 30 by 6.00 tires.



Left—New small Flying Cloud coupe

Right—Small Flying Cloud sedan, priced at $1,395

NEW DEVELOPMENTS— Automotive

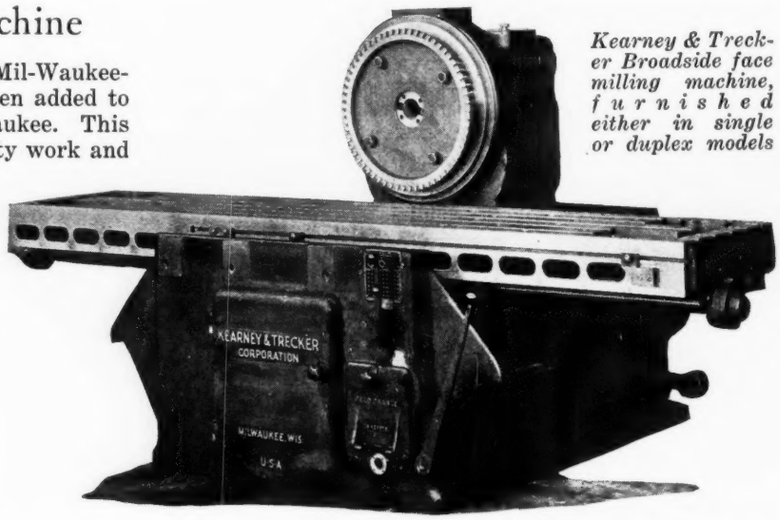
Broadside Milling Machine

THE Broadside, a new member of the Mil-Waukee-Mil family of milling machines, has been added to the line of Kearney & Trecker Corp., Milwaukee. This new machine is designed for very heavy duty work and includes features which insure a smooth flow of power to the cutters under the heaviest loads.

The Broadside has for its foundation either a standard Mil-Waukee-Mil Simplex or Duplex machine, one or two special face milling heads being used to replace the standard heads of these machines. The Broadside head is fitted with the new standardized spindle to take any size cutter up to 24 in. diameter. Automatic lubrication throughout the head and Timken bearing equipment are provided.

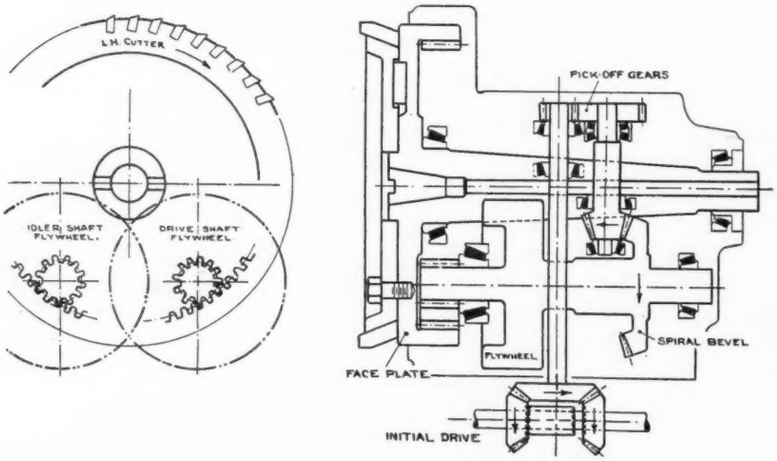
The main spindle, on which is mounted the face plate, is 5⅜ in. in diameter and is suspended in two Timken bearings—the front 8½ in. diameter and the rear 6 in. Integral with the face plate is an internal gear 20½ in. in diameter, 4 D.P. with 82 teeth. The shaft and pinion driving this gear receives its power through large spiral bevel gears.

In addition to the driving pinion shaft there is also an auxiliary shaft which is driven by the internal gear. Both shafts carry flywheels which revolve at eight times the main spindle speed and possess high momentum. The driving shaft flywheel prevents the cutter from kicking back when a tooth bites into the metal while



Kearney & Trecker Broadside face milling machine, furnished either in single or duplex models

Either a 14 or 22 in. wide table can be furnished with longitudinal speeds ranging from 3 to 11 ft. A 15 hp. motor is required.



Details of drive mechanism of Broadside milling machine showing the neutralizing flywheels

the other flywheel prevents the cutter from jumping ahead as a tooth leaves the metal. The effect of these two flywheels is to provide a smooth flow of power at the periphery of the cutter under all conditions.

Pick-off gears are provided to give 12 spindle speeds ranging from 6 to 51 r.p.m.; feed changes are those to be found in the Simplex and Duplex machines and provide 18 changes by means either of pick-off gears or quick change gearbox.

¾-In. Low-Speed Drill

THE United States Electrical Tool Co., Cincinnati, has placed on the market a new ¾ in., powerful, low-speed drill designed for continuous heavy-duty service. A universal motor pulls the drill at 350 r.p.m. loaded speed. In general, the drill is similar to other U. S. drills with SKF ball bearings, chrome nickel steel gears, one-piece aluminum body frame and commutator head. A quick make and break two-pole trigger switch is standard, as well as three-jaw screw back chuck for straight shank drill bits, etc.

"Fleet-Weld" Electrode

THE Lincoln Electric Co., Cleveland, has developed a new welding electrode known as the Fleet-Weld, which produces a dense weld of great ductility at greatly increased welding speeds. Welding speeds can be doubled or trebled with this new rod, according to test made.

A comparison of the porosity obtained with the new rod and that obtained from an ordinary rod deposited at high current and speed is shown in Fig. 1, the section at the left having been done with ordinary rod and that at the

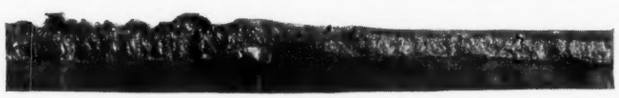


Fig. 1. Comparison of porosity of metal deposited from Fleet-Weld and ordinary electrode

Parts, Accessories and Production Tools

Fig. 2. Comparison of appearance of bead deposited from Fleet-Weld and ordinary electrode wire

right with Fleet-Weld. A similar comparison is given in Fig. 2, where the relative smoothness of the bead and the absence of a crater in the section at the left, which was made with Fleet-Weld, may be compared with that of ordinary electrode.

H. H. Boring Machine

BAKER BROTHERS, INC., Toledo, Ohio, has placed on the market its H. H. hydraulic-feed horizontal boring machine which can be adapted to a wide range of applications. The essential units of the machine are two end frames to which are attached sliding saddles, each operated by an independent Oilgear pump. On these saddles are mounted the necessary heads, either single or multiple spindle, and between the frames is placed a center frame of the necessary length to accommodate the work to be machined.

The main heads are driven by independent electric motors. The feed is controlled by pedals controlling the Oilgear pump at each end. The feed has the characteristic advance and automatic quick return of the Oilgear mechanism while the saddles slide on unusually wide and carefully scraped ways. One illustration shows a rear view of a machine complete with fixture and boring bars for boring two holes in an automobile transmission case, while the other illustration is a front view of a similar machine equipped with single boring bars for boring and counterboring truck rear axle housings.

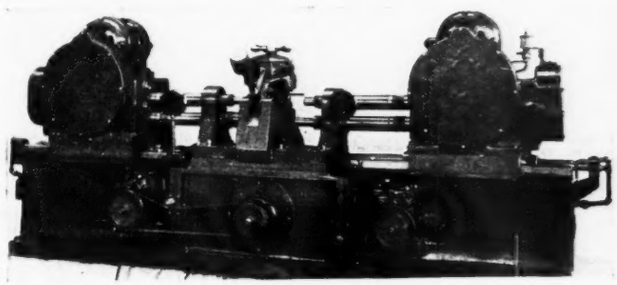


Fig. 1—Rear view of new Baker boring machine

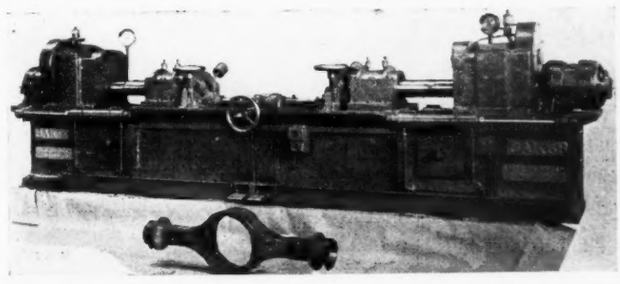
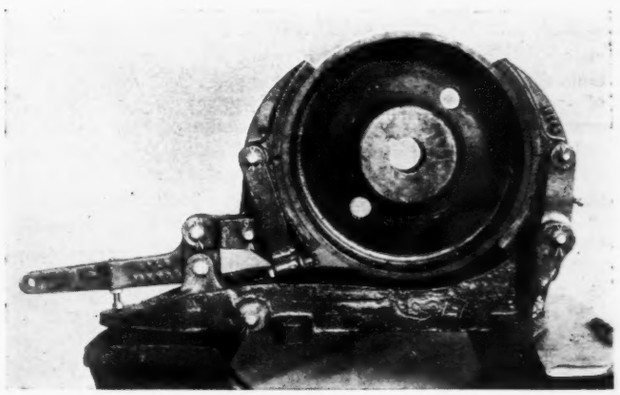


Fig. 2—Front view of Baker boring machine

Mechanical Brake for Cranes

THE Electric Controller & Mfg. Co., 2700 East 79th St., Cleveland, Ohio, has brought out a new mechanically-operated brake of the shoe type designed for use on the bridge drives of electric traveling cranes, lift bridges, electric hoists and other applications requiring foot-operated or hand lever-operated brakes. This new brake is a modification of the



E. C. & M. lever operated bridge brake

Type WB electrically operated brake and practically all its wearing parts are interchangeable with those of the electric brake.

Portable Slitting Shear

THE National Machine Tool Co., Racine, Wis., has developed a portable slitting shear which may be placed in any vise and made immediately available for slitting flat stock up to ⅛ in. thick and 3/16 by 2 in. bars. The shear body is designed to permit easy slitting of wide sheets; the blades are of tool steel and may be removed for sharpening.

A COMPETITION for mufflers for motor car and motorcycle engines has been organized jointly by the Automobile Club of Germany and the General German Automobile Club. It is open to manufacturers throughout the world. Money prizes are being offered and awards will be based on engine power, fuel consumption, cooling water temperature and noise with and without the muffler. Entries were to be made with the Schalldampfer-Wettbewerb, Berlin W-62, Landgrafenstrasse, 18, not later than Dec. 1.

First with the News

Reliable and Accurate

News of the Industry

PAGE 806 VOLUME 59 *Philadelphia, Saturday, December 1, 1928* NUMBER 22

Industry Enters December on High Production Basis

PHILADELPHIA, Dec. 1—The automotive industry will enter the last month of the year on a generally high production basis, many plants which have been almost completely down in November resuming following changes incidental to 1929 offerings. Several of the largest producing companies have completed new manufacturing units which will greatly increase 1929 facilities but will be operated at only part capacity for the time being.

Increasing operations in the Ford factories are maintaining a record rate of output in many companies supplying parts. Inability of the company to increase operations in its own plant to desired levels has compelled the placing of many contracts with outside parts sources. This has resulted in a greater diffusion of Ford business for finished and semi-finished products than in the past five years and has been an important factor in promoting increased operations in the parts field.

Retail sales throughout the country are receding seasonally. Dealer stocks of new cars in some lines have increased and there has been considerable increase in used car stocks. Conditions in the South and on the Pacific Coast are somewhat better than through the

(Continued on page 814)

Continue Olympia Show

LONDON, Nov. 24—After seeking the opinions of members, the British Society of Motor Manufacturers & Traders has decided against both proposals recently put forward in regard to the Olympia Show, viz.: that it should be held in January, 1931, instead of next October, or, alternatively, that it should be held every other year commencing October, 1931. As a result the Olympia Show will be held during approximately the same period next year as of late, viz.: from Oct. 17 to the 26.

German Production Gains

WASHINGTON, Nov. 28—German automobile production is reported increased during 1928, the number of passenger cars during the first eight months outnumbering those produced during the corresponding period of 1927 by 36 per cent and sales being reported 39 per cent better than the corresponding period of last year. Sales of trucks have increased 45 per cent.

Europe Studies Tax as Applied in U. S.

NEW YORK, Nov. 27—Europe is becoming increasingly motor-minded in the opinion of George F. Bauer, secretary of the foreign trade committee of the National Automobile Chamber of Commerce, who has just returned from a three months' trip through various points in Continental Europe during which he attended the World Motor Transport Congress in Rome.

Throughout Continental Europe, Mr. Bauer noted an increasing realization of the need of motor transport in increasing the efficiency of all lines of human effort. Motor buses, either of very small types or of larger and more luxuriant construction, are making a rapid appearance through all parts of the Continent and the farmer and peasant wherever possible are using the motor truck for transporting their produce to the market. As a result Europe is beginning an effort to remove obstacles at present in the way of more widespread adoption of motor transport and is considering means of placing the automobile more rapidly within the reach of the individual.

Certain countries, Mr. Bauer indicated, are planning to study American methods of taxation, more particularly the gasoline tax with a view to substituting these methods for the present high horsepower and luxury taxes in vogue.

Toledo Machine Expands

TOLEDO, Nov. 26—Toledo Machine & Tool Co. has completed a $1,000,000 expansion to its foundry to keep up with automotive demand for presses. Foreign business has accounted for more than $1,000,000 in orders.

Velie to Discontinue Automotive Activity

MOLINE, Nov. 28—Definite decision to discontinue the manufacture of the Velie automobile was announced here last night by W. L. Velie, Jr., vice-president of the Velie Motors Corp. Mr. Velie denied that the plant has been sold but it is known that negotiations are under way for the sale of the various automotive producing divisions to other companies among which General Motors and Chrysler are prominently mentioned. Mr. Velie, who heads the Mono-Aircraft Corp., said he would center his future activities in the aircraft manufacturing field.

Studebaker Export Sales Gain 30% in 10 Months

SOUTH BEND, Nov. 27—Sales of Studebaker and Erskine cars in export markets reached a new high mark during the first 10 months of 1928, according to H. S. Welch, manager of export sales for the Studebaker Corp. of America.

"Studebaker is already assured of the biggest year in export business in its history," said Mr. Welch. "Sales for the 10-month period exceed by a substantial margin the best previous year the corporation has enjoyed in overseas markets.

"October is the tenth consecutive month Studebaker and Erskine export sales have gained over the corresponding months last year. Sales for the first 10 months this year show a gain of 30 per cent over the first 10 months of 1927."

Sign Truck Sales Agreement

ELMIRA, N. Y., Nov. 28—According to an announcement made by C. B. Rose, president of American-LaFrance & Foamite Corp., negotiations have just been completed between American-LaFrance and the Step-N-Drive Truck Corp. of Buffalo, for the sale and service of Step-N-Drive house-to-house delivery trucks through American-LaFrance direct factory branches.

Hupp-Chandler Deal Waits Formal Word

Control by Detroit Company Regarded as Fact—Securities Worth $135,000,000

CLEVELAND, Nov. 28—Acquisition of control of Chandler-Cleveland Motors Corp. by Hupp Motor Car Corp. appeared this week to be a fact despite the absence of official statements from either company. Completion of the deal would mark another important merger in the series the industry has witnessed in the last 15 or 18 months.

The most widely accepted report is that the control was acquired through open market purchases of stock by the Hupp interests. If this is true there presumably will be an offer of cash or Hupp stock to Chandler-Cleveland stockholders which would make the merger complete after the usual formalities.

There have been numerous rumors to the effect that either W. C. Durant or the Van Sweringen brothers of Cleveland were the guiding spirits in the merger, but so far there has been no evidence to support this gossip, which is, in fact, largely discredited in well informed quarters. The Hupp company and its affiliated interests are well qualified in every respect to swing the deal and the outstanding success of Hupp this year gives every incentive for the present group to maintain control in the event of any merger or other means of expansion.

Hupp productive and merchandising facilities have, it has been observed, been strained to the utmost by the public reception of the new offerings made last year, and the company is believed to be seeking the indicated expansion through merger rather than adding to the super-abundant productive capacity of the industry by building plant additions.

Present market value of the combined securities of the two companies is about $135,000,000. Combined production of the two plants this year will approach the 100,000 mark, while productive capacity under the new set-up would be far in excess of this figure.

Both are long-established companies in the business, with a prestige backed and developed by honest manufacturing and merchandising policies.

Traffic Committee to Meet

NEW YORK, Nov. 27—The committee on the model municipal traffic ordinance is to have another meeting in Washington, Tuesday, Dec. 11, to further plans for securing more general adoption of this code. William E. Metzger, Detroit, chairman of this committee, will preside. Among the organizations recently enlisted in the effort to secure more uniform adoption of this code is the Motor & Equipment Association.

Tax Refund Claim Open to Couzens

WASHINGTON, Nov. 28—Abatement of a $10,900,000 assessment against Senator James Couzens of Michigan and other former stockholders of the Ford Motor Co. formally closed the government's $30,000,000 tax case here when the board of tax appeals ruled that Senator Couzens and his co-defendants had over-stated their pprofit on the sale of the Ford Motor Co. stock rather than understated it, as the government claimed. Experts believe that the ruling leaves Senator Couzens and the other former Ford partners free to claim a tax refund estimated at several millions of dollars.

Jordan to Increase Stock 100,000 Shares

CLEVELAND, Nov. 28—Jordan Motor Car Co. will increase its common stock from 200,000 no-par shares to 300,000 shares. The additional shares will be offered to stockholders at a later date and funds received will be used for working capital. Stock not subscribed for will be underwritten.

Reo Declares Extra Dividend

LANSING, Nov. 28—Reo Motor Car Co. directors have declared an extra payment of 20 cents on capital shares in addition to the regular quarterly payment of 20 cents, both payable on Jan. 2 to holders of record on Dec. 10.

Federal Omits Stock Payment

DETROIT, Nov. 28—Federal Motor Truck Co. has omitted the regular quarterly dividend of 2½ per cent in stock heretofore paid, but declared the quarterly cash dividend of 20 cents on capital stock.

Greve Hupp Director

DETROIT, Nov. 28—William M. Greve of New York has been elected a director of Hupp Motor Car Corp. to fill the vacancy caused by the resignation of John Moriarty.

Dura in New Plant

TOLEDO, Nov. 26—The Dura Co. has moved into its new plant here without disturbance to regular production which will establish new records this year. The new plant is 516 x 266 ft. and represents an investment of more than $1,000,000 in plant and equipment.

Henning Joins Wise

DETROIT, Nov. 28—Paul H. Henning has resigned as vice-president of the Detroit Screw Works, and is now associated with the Wise Industries, of Detroit.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, Nov. 30—Industrial activity and trade have been rather irregular during the last week. The textile industries have been more active, and the shoe and steel manufacturing industries slightly less active.

POWER CONSUMPTION

Consumption of electricity by industry during October, according to a recent report compiled by the "Electrical World," was 10.1 per cent above the figure for the corresponding month a year ago. With the exception of the textile, leather, and lumber industries, all of the primary manufacturing groups showed a higher rate of consumption of electrical energy in that month.

FREIGHT CAR LOADINGS

Car loadings for the week ended Nov. 10 amounted to 1,053,295 cars, which marks an increase of 78,161 cars above those in the corresponding week a year ago and a decrease of 53,594 cars under those in the corresponding week two years ago.

LIFE INSURANCE SALES

Sales of ordinary life insurance during October totaled $764,577,000, which is 16 per cent more than in October a year ago; while sales in the first 10 months of the current year increased 4 per cent above those in the corresponding period last year. These gains are shared by 60 per cent of the contributing companies, representing practically every section of the country.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended Nov. 24 stood at 97.3, which compares with 97.7 the week before and 97.6 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City for the week ended Nov. 21 were 4 per cent above those in the similar week a year ago.

FEDERAL RESERVE REPORT

The report of the Federal Reserve member banks for the week ended Nov. 21 showed relatively small changes in deposits and investments, while loans and discounts increased $118,000,000 and borrowings from the Federal Reserve banks decreased $57,000,000. The consolidated statement of the Federal Reserve banks for the week ended Nov. 21 showed an increase of $9,800,000 in bills bought in the open market. The reserve ratio on Nov. 21 was 68.4 per cent, as compared with 67.4 per cent a week earlier.

Opens Philadelphia Office

CHICAGO, Nov. 26—Fusion Welding Corp., this city, has opened a branch office in Philadelphia at 1528 Vine Street for the distribution of its Weldite welding rods and Fuzon arc welders.

Auburn Drops Price on Two New Lines

Six-Cylinder Model Will Sell $995 to $1,095—Eight $1,395 to $1,695

AUBURN, IND., Dec. 1—A new six and a new eight, with base prices of $995 and $1,395, respectively, are announced this week by Auburn Automobile Co. The six, replacing the 6.76, will be known as the 6-80, and the eight, replacing the 8-88, will be designated the 8-90. Although the six marks the first venture by Auburn into the $1,000 class, it has the same wheelbase and embodies the same features as its predecessor. The same is true of the new eight. Although selling at a lower price, nothing has been withdrawn and in several instances additional features have been provided.

Prices are as follows:

	6-80	6-76
Sport sedan	$995	$1,295
Sedan	1,095	1,395
Cabriolet	1,095	1,395
Victoria	1,095	....
	8-90	**8-88**
Sport sedan	$1,395	$1,595
Sedan	1,495	1,695
Cabriolet	1,495	1,695
Victoria	1,495	1,695
Speedster	1,495	1,695
Phaeton sedan	1,695	1,895

Ford New York Branch Now Moved to Kearney

NEW YORK, Nov. 26—Ford Motor Co., New York Branch, has recently completed moving all departments except retail sales from its former headquarters at 1740 Broadway to the plant at Kearney, N. J. In addition to manufacturing operations which have been conducted at Kearney for some time, the executive, accounting and export operations of the New York branch are now concentrated at Kearney.

Production at this plant is now on the basis of 450 cars a day. The Lincoln department of this branch of the Ford Motor Co. remains in New York.

St. Paul Plant on 225 Daily

ST. PAUL, Nov. 26—The Twin City plant of Ford Motor Co. is turning out 225 cars daily. The glass division is turning out 14,500 ft. daily of which 40 per cent is utilized in the assembly plant. The 50 tons a day of sand required for grinding is mined from under the plant itself.

Shipments Lost on Vestris

NEW YORK, Nov. 24—Automotive products in the cargo lost with the S. S. Vestris included a shipment of automobiles by Kissel Motor Car Co. to its distributor in Buenos Aires. The cars were built specially for the Argentine show, but they are duplicated in other shipments. A large shipment of North East parts bound for Brazil was also part of the cargo.

Heads G.M. Factory

Frank V. Hadas, factory manager of G.M. Truck Co., succeeding H. J. Warner

Arthur Chevrolet Heads Airplane Engine Company

INDIANAPOLIS, Nov. 26—Chevrolet Aviation Motors Corp. has been organized here with Arthur Chevrolet as president to manufacture three sizes of air-cooled aviation engines. The company is capitalized for $1,000,000 and will begin operations in the plant of the Chevrolet Bros. Mfg. Co., which it takes over.

The company's products will be known as Chevrol-Air engines. They will be made in four, six and eight-cylinder sizes, the four developing 60 to 70 hp., the six 125 to 150 hp. and the eight 180 to 200 hp. Prices will be approximately $1,000, $1,500 and $2,000 respectively.

Officers of the company in addition to Mr. Chevrolet are G. S. Griffin and B. P. Prunk, vice-presidents, and O. A. Kuehrmann, secretary-treasurer. Directors will be announced later.

George W. Atterbury

BUFFALO, Nov. 24—George W. Atterbury, founder of the Atterbury Motor Car Co., this city, died Nov. 17, at his ranch near Woodland, Cal., after a long illness. Burial was at Oakland, Cal. Mr. Atterbury established the Atterbury company in 1903 and continued as president until he retired a few years ago and moved to California. Originally he built electric powered vehicles, later changing to gasoline. Atterbury trucks were among the first to use worm-drive rear axles.

Glenn H. Bower

DETROIT, Nov. 24—Glenn H. Bower, 44 years old, died here suddenly. He was purchasing agent for Clayton & Lambert Manufacturing Co. for 23 years and retired last January.

Commercial Credit to Finance Planes

Will Restrict Operations to Models Priced $10,000 Upward for Present

BALTIMORE, Nov. 26—Commercial Credit Co. has perfected plans for the financing of time sales of airplanes. The company has organized a special airplane division headed by C. W. Mitchell, Jr., former navy aviator. Three insurance companies have offered to issue policies which are a part of the financing contract, Mr. Mitchell said. For the present only planes selling for $10,000 or more will be financed, the restriction and requirements being altered as later experience dictates.

Time buyers of airplanes make a minimum down payment of 33 1/3 per cent plus the standard finance charges, about the same as the rates prevailing in the automobile trade. Insurance rates are much higher for the airplanes than for other financed machines. The insurance coverage is inclusive, repaying for losses by fire, theft, winds, crashes, public liability, property damage, and passenger hazards if passengers are carried for hire. In case of a plane costing $21,000, the present insurance rates against all hazards is estimated at $3,750, more or less, depending upon three main factors: Type of plane, pilot's record, character of proposed service.

Duncan Denies Chrysler Deal

BALTIMORE, Nov. 24—A. E. Duncan, president of Commercial Credit Co., has denied that Chrysler Corp. has either purchased or is negotiating for purchase of control. Financing of time sales of Chrysler products is expected to include time sales of Dodge Bros. Corp. products in the future, he said.

Klemm to Buy Aeromarine

NEW YORK, Nov. 26—The Klemm Co., manufacturer and distributor of aircraft, is planning to secure the plant of the Aeromarine Plane & Starter Co. at Keyport, N. J., according to announcement recently made at the headquarters of the company. The purchase is to include a shore frontage of a mile on Raritan Bay, 230 acres of land and 21 buildings. Inglis M. Uppercu, Cadillac distributor for this territory, is president of the Klemm company.

Durant Builds on Coast

OAKLAND, CAL., Nov. 24—Durant Motor Co. of California has commenced work on a $100,000 addition to its plant here. According to Norman DeVaux, head of the Western Durant organization, the new structure has been made necessary by double production schedules following the recent introduction of new Durant-Star models and the unusual demand they created.

More Federal Funds Needed, Says Chapin

Work Has Outstripped Appropriations, He Asserts; Approves Traffic Code

NEW YORK, Nov. 24—Speaking before the meeting of the American Association of State Highway Officials, Roy D. Chapin, chairman of the highways committee of the National Automobile Chamber of Commerce, indicated an increasing need for good roads due to the increasing production of American automobiles.

During the past few years, Mr. Chapin pointed out, the Federal government has been able to spend on highway improvements more than the annual authorization of $75,000,000. This has been because of a surplus of funds appropriated in advance of construction. This surplus is now about exhausted and it will be necessary to secure from the Federal government additional appropriation for highway improvement, said Mr. Chapin.

Stamping the cooperation which exists between the Federal and state authorities as deserving of the highest praise, Mr. Chapin advocated further cooperation between state and county and local jurisdictions in the development of both secondary and metropolitan areas. He spoke, too, for a system of highways classified as to traffic requirements with a limited mileage of roads to take care of the heavy traffic in industrial areas where the movement is great, coupled with a much larger mileage of light roads for lighter traffic.

Favors Uniform Traffic Code

With respect to regulation, Mr. Chapin said that the cooperative work undertaken under Mr. Hoover's direction and looking toward uniform traffic regulation will do much to further safe travel while the uniform sign and direction standards already agreed upon by the states and Federal government will be welcomed by motorists everywhere.

With respect to the business regulation of motor vehicles engaged in interstate commerce, Mr. Chapin said that the motor industry would not oppose any regulation which may be based on facts which clearly indicate that the public interest requires protection. "We do oppose," he added, "any and all regulations which may have for its purpose the protection of any one transportation group contrary to the general interest in all kinds of efficient transportation.

Mr. Chapin also touched upon the necessity of protecting the public interest against undue grants of toll bridge franchises to private interests, saying that at no time should such interests be permitted to place perpetual toll barriers across roads which have been built by the public.

Also General Manager

R. W. Ruddon, first vice-president of Federal Motor Truck Co., who also becomes general manager

French Exports Decline 7609 Units in 9 Months

PARIS, Nov. 24—With a toal of 28,602 passenger cars and 3707 trucks and tractors exported during the first nine months of the present year, French foreign business showed a loss of 7609 units compared with the corresponding period of 1927. The greatest volume of export business was done with Algeria, which purchased 5864 passenger cars during the nine months. Others in order of importance were Spain, Belgium, Great Britain, Morocco, Indo-China, Switzerland and Tunisia.

Automobile imports into France totaled 6887 passenger cars and 228 trucks and tractors during the nine months. The United States headed the list with 3056 vehicles, followed by Italy with 2989. The American imports had twice the value of those from Italy.

George Arthur Stephens

MOLINE, Nov. 24—George Arthur Stephens, whose father was one of the founders of the Moline Plow Co., and who served as president of the company from 1902 to 1918 when John N. Willys acquired the Stephens' interests, died Nov. 20 in New York City where he had been taken last week to receive treatments. Mr. Stephens was 77 years old. In 1888 he joined the Moline Plow in an official capacity, acting first as purchasing agent and four years later became secretary when it was reorganized, later becoming vice-president and upon the death of his father, George Stephens, succeeding to the presidency.

Clawson & Bals in N.S.P.A.

DETROIT, Nov. 24—National Standard Parts Association has elected Clawson & Bals, Inc., Chicago, as a manufacturer member.

G.M. Sales Abroad 210,290 in 9 Months

Total Exceeds Full Year of 1927 and Approximates 1925-26 Totals

NEW YORK, Nov. 26—General Motors Corp. sold more cars overseas during the first nine months of this year than in any previous full year. Sales during this period amounted to 210,290 cars and trucks and compare with 193,830 for the entire year 1927. Further comparisons show that this figure almost equaled the combined volume for the years 1925 and 1926, which amounted to 219,685.

The number of cars sold to overseas dealers is shown by quarters in the following tabulations:

Number of Cars and Trucks Sold

Period	1928	1927	1926	1925
1st Quarter	56,937	39,443	31,936	15,577
2nd Quarter	80,533	53,009	31,861	26,277
3rd Quarter	72,820	48,885	22,799	25,906
4th Quarter		52,493	32,195	33,134
		193,830	118,791	100,894

1929 Rubber Production Estimated 715,000 Tons

NEW YORK, Nov. 26—Crude rubber production for 1929 has been estimated at 715,000 tons, according to advices received from England by F. R. Henderson Corp. Consumption, according to the same estimate, is placed at 695,000 tons. Of this amount 425,000 tons is credited to American consumption and the Henderson company believes that this figure is low.

Activity during the past week increased somewhat and prices showed an advancing tendency with a large liquidation of December business. Prices advanced during the week from 40 points for nearby positions to 60 points for next year's crop.

Monarch to Add Tractor

SPRINGFIELD, ILL., Nov. 24—Monarch Tractors Corp., a subsidiary of the Allis-Chalmers Mfg. Co., has acquired a 138-acre tract south of its plant here to provide a building expansion which will double the present floor space of 68,000 sq. ft. Improvements will be completed within three months, officials have announced. The completed plant will be a modern track-type tractor factory and will provide for introduction of a new smaller model of tractor in addition to increased production of its "75" and "50" tractors.

Johnson Farmer Distributor

DETROIT, Nov. 24—T. Ray Johnson, with offices at 4236 General Motors Bldg., has been appointed automotive distributor for the Farmer centralized system of chassis lubrication, manufactured by the Lubrication Devices, Inc., of Battle Creek.

Men of the Industry and What They Are Doing

Segrave Coming to U. S. for New Try at Record

WASHINGTON, Nov. 27—Major H. O. D. Segrave, who set a new world's straightaway record in March, 1927, only to see it shattered by a fellow countryman a year later, who in turn lost it to an American, will arrive in the United States the middle of February in an attempt to regain the record for himself and Great Britain. This announcement, the first official intimation that Major Segrave will again seek the record, was made today by Vale Haresnape, secretary of the contest board of the American Automobile Association. Major Segrave will bring to the United States a new racing sensation—his Golden Arrow—and will try for the record some time in March, either on one of the Florida beaches or on the dry lakes of California, if one of suitable length for a run can be found.

G.M. Export Makes Assignments

H. M. Larner, of the general manufacturing division, General Motors Export Co., sailed Nov. 21 for Berlin where he will spend approximately two months at General Motors G.m.b.H. before leaving for Batavia where he will be commercial body specialist for General Motors Java. G. H. Good, of the sales department of General Motors Export Company, will sail from San Francisco for Australia where he will join the sales staff of General Motors, Australia, Ltd.

Wood Changes Managers

Ed Hancock, manager of the Detroit branch of the Wood Hydraulic Hoist & Body Co., has been transferred to Gar Wood, Inc., as general manager in charge of production of speed boats and engines. James Works of the Los Angeles branch has been transferred to Detroit as manager of the Detroit branch, and Edwin Hill of the Detroit branch has been transferred to Los Angeles.

Adams on Foreign Tour

Hugh L. Adams, vice-president of the Edward G. Budd Mfg. Co., is on a brief trip to England, France and Germany to confer with officials of factories in those countries in which the Budd company is interested and which are building the Budd type of all-steel full vision bodies and body parts.

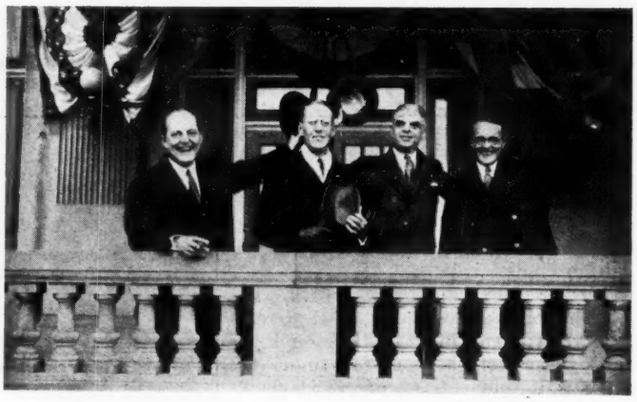
United Alloy Makes Promotions

J. M. Shlendorf, vice-president in charge of sales at the plant of the United Alloy Steel Corp., has announced several promotions to take effect immediately.

W. M. Garrigues, who has been assistant general manager of sales for the past seven years, becomes general sales manager, and H. M. Schmidt, who for two years has been assistant sales manager, alloy division, has been promoted to sales manager, bar and billet division. J. S. Andrews, formerly assistant sales manager in the Detroit district, becomes assistant sales manager of the sheet mill division.

Hello Evansville!

The Graham brothers, accompanied by Harold Van Orman, lieutenant-governor of Indiana, greeting the welcoming crowd at Evansville, which staged a Graham Day in appreciation of the expansion of the Graham operations in that city. Left to right, Robert C., Joseph B., Mr. Van Orman and Ray A.



Leys Joins Fargo in Canada

Arthur A. Leys has been appointed director of sales of the Fargo Motor Corp. of Canada. Mr. Leys is well-known in automotive circles throughout the Dominion and is a member of the Society of Automotive Engineers. He has many years experience in commercial car merchandising, his activities carrying him to many foreign countries.

Nash on Hunting Trip

C. W. Nash, president of Nash Motor Co., is on a three weeks' hunting trip in Texas as the guest of Tom Cooper, president of the Tom Cooper Motor Co., Oklahoma City, and Otis M. Smith, vice-president and general manager of the Cooper organization.

Seymour Joins Bradfield

B. M. Seymour has resigned as manager of the New York branch of the General Motors Truck Co. where he had charge of taxicab and truck sales, and has joined Bradfield Motors, Inc., of Chicago, as sales manager.

Dingee Advertising Manager

Albert N. Dingee has been appointed advertising manager of the Electric Storage Battery Co., Philadelphia, to succeed the late A. B. Kreitzburg. Mr. Dingee has been in the company's sales department for the past 18 years.

McAneeny on Bank Board

W. J. McAneeny, treasurer of the Hudson Motor Car Co., has been elected a director of the Merchants National Bank, Detroit.

Wagner Makes N. Y. Changes

Important changes have been made in the personnel of the New York staff of the Wagner Electric Corp. of St. Louis, freeing E. W. Goldschmidt, Eastern executive representative, from the duties of district manager and promoting H. N. Fenton, until recently manager of the Milwaukee office, to that post. Mr. Goldschmidt, who has been the representative of the Wagner Electric in New York for 25 years, and who is chairman of the exhibition committee of the National Electric Light Association, will now devote all of his time to contacting with the electric light and power industry.

Turner Heads Kelch Sales

William S. Turner, who has been connected with the automotive industry for over 12 years, has been appointed sales manager of the Kelch Heater Division of the Grand Rapids Metalcraft Corp., Grand Rapids. Mr. Turner will make his headquarters in the Fisher Building, Detroit. The Kelch heater is being marketed directly to car manufacturers, who in turn market them through their dealer organizations.

Lynn and Hackett Get Posts

Ralph F. Lynn has been appointed manager by the Graham-Paige Motors Corp. over a newly created district that comprises Omaha, Des Moines, Lincoln, and Sioux Falls. He has established headquarters in Omaha. R. C. Hockett has been appointed district manager in Dallas, succeeding T. E. Dean.

Welch Back From Europe

H. S. Welch, manager of export sales for the Studebaker Corp. of America, has returned from a six weeks' trip to Europe. While there, he visited Studebaker dealers in England, France, Spain, Belgium and Germany, and attended the Paris and London automobile shows.

Willys to Increase Cash by $8,261,475

Directors Vote to Capitalize Part of Development Program in New Stock

TOLEDO, Nov. 27—Willys-Overland Co. will increase its cash in the treasury by $8,261,475 and pay dividends of $900,000 in cash and 5 per cent in stock, equivalent to 142,845 shares, following action by directors this week.

Stockholders of record Dec. 6 will be given the right to subscribe to additional common stock in ratio of one share to each seven and one-half shares held at $25 a share, with rights expiring Dec. 26. On Feb. 1, to holders of record Jan. 18, a stock dividend of 5 per cent and regular cash dividend of 30 cents a share will be paid. This will result in 3,000,000 shares of common stock outstanding.

John N. Willys, president, said: "Directors have decided to capitalize a small part of the $45,000,000 expended out of earnings in the last six years for improvements to plant, rehabilitation and increasing production."

Mr. Willys said that 1928 production would be more than 325,000 cars, an 85 per cent gain over last year. Export sales have made large increases and the new Los Angeles plant is counted on to make large gains in 1929.

Bellanca Votes Increase to 500,000 Common Shares

NEW YORK, Nov. 24 — Bellanca Aircraft Corp. at a stockholders' meeting yesterday authorized an increase of common stock from 20,000 to 500,000 shares. Of this new authorization 175,000 shares will be outstanding. Present stockholders will exchange their shares for new common on the basis of three new for one share of old. The 10,000 shares of preferred stock at present outstanding are to be retired at $105 a share, or five shares of new common for one share of preferred.

There were 126,000 shares of the new common voting trust certificates marketed last week, and the nearly $2,000,000 thus raised will be used to enlarge the plant at New Castle, Del., so that production can be stepped up to one plane a day.

Unit in Brown-Lipe Deal

MILWAUKEE, Nov. 26—Negotiations for the purchase of Brown-Lipe Gear Co. by the Unit Corp. of America are reported to be under way with possibility of an official announcement on their outcome this week.

French Roads Deteriorating

WASHINGTON, Nov. 24—An expenditure of 72 francs per automobile on the highways of France for the fiscal year of 1928 by the French government is reported to the U. S. Department of Commerce. Present registration of cars is approximately 1,000,000, the report states. Highways in that country, according to the Minister of Public Works, are rapidly deteriorating. Annual maintenance of existing roads calls for 507,000,000 francs, or 100,000,000 more than now being expended. Under present appropriations, he reports, within the next seven years the highways must be reduced one-fifth, or the roads entirely rebuilt at a cost of 2,000,000,000 francs.

Henney to Vote on Change to Motor Industries Corp.

CHICAGO, Nov. 26—Stockholders of Henney Motor Co. will meet Dec. 4 to vote on increasing the common stock to 500,000 shares from 200,000 shares, and a change in the company's name, probably to Motor Industries Corp.

Buys Elgin Clock Company

ELGIN, ILL., Nov. 24—The Henney Motor Co. this week acquired the Elgin Clock Co. for an amount, including company earnings, in excess of $4,000,000. Transfer of the plant ownership, it is stated, will not affect operations of the Elgin concern and tentative plans of the new operators provide for intensifying of output of the vanity and smoker sets for automobiles with possibility that the plant will branch into other lines of products. N. W. Church, president, who originally held nearly 80 per cent of the stock, plans to make his future home on the west coast.

The Elgin Clock Co. organized in 1922, had an original working capital which never exceeded $185,000 and at the consummation of this sale each shareholder received over $3,000 for each share of $100 stock, which had been more than repaid in dividends prior to the sale. The company was formed originally to produce clocks for the motor car trade and develop other accessories sold to the trade as regular equipment. Two or three years ago, following the death of Charles H. Hulburd, president of the Elgin National Watch Co., the cooperation between the two corporations ended and Elgin Clock turned to the smoker and vanity equipment field in which it was very successful. Mr. Church came to this city nine years ago when he took over the Van Sicklen company, manufacturer of speedometers, which was then in financial straits. Associated in the venture was John N. Willys, whose interest was subsequently acquired and the entire plant sold later to the Stewart-Warner Speedometer Co. Mr. Church will become identified with an airplane concern in Los Angeles which is planning a Detroit branch, where he will make his headquarters after first of the year.

Offers LaSalle Town Sedan

DETROIT, Dec. 1—Cadillac Motor Car Co. is producing a new town sedan model on the LaSalle chassis, priced at $2,675. The new model body is slightly shorter than the standard sedan body and carries a trunk at the rear.

Financial Notes

Borg-Warner Corp. has declared a quarterly stock dividend of 2 per cent in common stock on common and the regular quarterly cash dividend of $1 on common, both payable Jan 2. to stock of record Dec. 20. The company, in a statement, said it is the intention of directors to maintain this rate so that the stock may be considered on a regular basis of $4 a share in cash and 8 per cent in stock annually. Current assets as of Oct. 31 were $9,164,000 against current liabilities of $2,300,000, cash holdings were in excess of $3,600,000. Net income in the first 10 months after all charges and Federal taxes was $3,928,960 or $9.40 a share on common stock after preferred dividends.

Swallow Airplane Co. is marketing 24,000 shares of no par common stock. This stock is part of an authorized issue of 100,000 shares of which 49,000 shares will be outstanding after this issue is taken up. Proceeds of the sale will be used for expansion. New stock was placed on the market at $15 a share.

Pratt & Lambert, Inc., has declared the regular dividend of 75 cents a share and an extra dividend of $2 a share on the no par common stock, payable Jan. 2 to stock of record Dec. 15. It is the intention of directors to increase the regular dividend rate from $3 to $4 annually, beginning April 1, 1929.

Reynolds Spring Co. reports net profit of $35,162 in the September quarter, comparing with net loss of $2,401 in the preceding quarter and net loss of $8,039 in the third quarter last year. Net profit for the nine months ended Sept. 30 was $38,847 against net loss of $33,615 in the first nine months of 1927.

Hutto Engineering Co. reports net profit for the year after all charges and taxes of approximately $122,000 for the fiscal year ended Sept. 30. Current assets show a ratio of 8 to 1. Sales during the year approximated $900,000 with foreign business showing an increase of 1000 per cent.

Electric Storage Battery Co. has declared a quarterly dividend of $1.25 on common and preferred stocks, respectively, and also 10 per cent stock dividends on both common and preferred, all payable Jan. 2, 1929, to holders of record Dec. 8.

Libbey-Owens Sheet Glass Co., of Toledo, stockholders will vote Dec. 5 on retiring $4,000,000 7 per cent cumulative preferred stock on April 1 and changing the directorate. The Graham brothers will become active in the management.

Seiberling Rubber Co. reports net profit before taxes for the fiscal year ended Oct. 31 as $876,716. Sales for the period totaled $16,329,111, an increase of 40 per cent over the previous year.

Norwalk Tire & Rubber Co. for the year ended Sept. 30, reports net profit of $46,883 after depreciation, interest and other charges against net loss of $46,856 in the preceding year.

Steel Market Waits Final Price Moves

Hot-Rolled Steel Bar Producers Hesitant on Announcing Advances for 1929

NEW YORK, Nov. 28—A large volume of hot-rolled steel bars is still due to consumers at 1.90 cent, Pittsburgh, and although what little new business has come through of late is believed to have been done at 1.95 and 2.00 cent, depending upon the tonnage involved, producers seem to be hesitant about promulgating an out-and-out advance for first quarter 1929 shipments. Nominally a 2.00 cent price is supposed to be in force, and if this is actually obtained for first quarter 1929 business, it will really mean an advance.

Cold-finished bar makers are anxious to know where they stand in the matter of prices for their hot-rolled product, being pressed by parts makers for definite first quarter quotations. Manufacturers of automotive alloy steels have announced a 2.65 cent base price for tonnage business and a 2.75 cent base for the requirements of the smaller consumers. The 2.65 cent, f. o. b. mill, price is $2 per ton lower than that nominally quoted heretofore, but it is thought that a good deal of desirable business has been booked of late at 2.65 cent.

A very gratifying amount of activity has developed in the placing of first quarter orders for automotive alloy steels as well as in full-finished body sheets and hot-rolled and cold-rolled strip steel. First quarter prices for strip-steel are approximately $2 per ton higher than the levels at which most of the material during the current quarter was billed. Whether the higher prices on black and blue annealed sheets announced for first quarter 1929 have been firmly established, is still problematical. While some business is reportetd to have been placed at the higher prices, it is not thought to have been sufficiently representative to furnish a conclusive test. The 4.10 cent, Pittsburgh, price on automobile body sheets appears, however, to have encountered no marked resistance on the part of buyers.

Pig Iron—Demand from automotive foundries continues brisk, with the Michigan price at $20 and Valley furnaces quoting $17.50 @ $18.00 for No. 2 foundry and $18.25 @ $18.50 for malleable, furnace. Lifting of the anti-dumping order against German pig iron is, however, interpreted as a restraining influence on further advances.

Aluminum—The market continues along routine lines, with die-casters having a large number of inquiries for quotations on pistons. Prices are well maintained both for virgin and remelted grades.

Copper—Domestic consumers are buying for their late January and February requirements, with prices maintained at 16 cents, delivered Connecticut and 16⅛ cents delivered Middle West. A leading producer has recently voiced the opinion that the metal's statistical position, especially because of the steadily rising consumption, justifies further advances.

Tin—The bull contingent seems to be in control in London, and prices have advanced sharply. Consumers are fairly well supplied, and watching developments for the time being.

Lead—Storage battery manufacturers are taking on fair-sized tonnages. The market shows increasing firmness.

Zinc—Demand has turned impressively more active, and consumers have bought liberally at prevailing prices which are generally considered as low.

Automotive Dollar Worth 108.7 Cents

WASHINGTON, Nov. 24—Based upon the average purchasing power of a dollar for all wholesale commodities, the dollar bill invested in an automobile in October, 1928, would buy 108.7 cents' worth of machinery, while in 1926 the dollar would buy but 92 cents' worth, according to the reports of the Bureau of Labor Statistics.

On the same basis, the value of automobiles purchased by a dollar in October of this year did not fluctuate from the September level, but was much more than the October, 1927, level of 102.2.

A general drop in wholesale prices of commodities with farm prices in the lead gave much greater purchasing power to the average dollar bill of the consumer during October, 1928, the bureau points out.

Hardwood Buying Exceeds Normal Season Demand

ATLANTA, Nov. 27—Though automobile and body manufacturing plants are placing orders for their needs in the southern hardwood list for current requirements only, more orders are being booked with the result that the total volume of sales now being made is better than normal for the period.

Most takings at present are in the ash and maple list of thicker dimensions, with sales of the first and second, or best grade, and No. 1 common and select, or second best grade, leading. Prices are firm. There is also a brisk demand reported by mills all over this section for sap gum from the automobile industries at good prices. Dry lumber, however, is scarce, at most of the mills in this section.

Gould Takes Detroit Post

DETROIT, Nov. 27—Harold M. Gould, formerly traffic engineer of Dodge Bros. Corp., has been named traffic engineer of the Detroit Police Department.

Barnes Heads New Houdaille Company

Houde Engineering Acquired by New Company—Stock Over-subscribed

DETROIT, Nov. 24—Houdaille Corp. has been organized to take over the business of the Houde Engineering Corp., manufacturer of Houdaille hydraulic shock absorbers. The new management will be headed by Claire L. Barnes, as president. Mr. Barnes also is president of Oakes Products Corp. and the Hershey Corp.

Simultaneously with the listing of shares on the Chicago and Detroit exchanges a banking group composed of Harris, Small & Co., Detroit, and Paul H. Davis & Co., Chicago, offered publicly 108,000 units of the Houdaille corporation at $66 a unit, consisting of one share of Class A convertible preference no par stock at $41 per share and one share of Class B stock no par value at $25 per share. The offering was heavily oversubscribed.

Present operations of the Houdaille corporation are being carried on at a high rate. Net earnings for the nine months ended Sept. 30, 1928, after all charges, including Federal taxes, which in the first nine months of the company's operation on a quantity production, were $944,935, equal to $8.74 a share on the Class A stock outstanding and $5.01 a share on the Class B stock, after Class A dividends.

Bar 2 Soviet Commissioners

WASHINGTON, Nov. 26—Two members of the Soviet Russian business mission to the United States have been refused passport visas by the State Department. The mission primarily was to negotiate with American automobile companies for cooperation in establishing automobile factories in Russia. The proposed negotiations were said to involve $20,000,000 with the eventual placing of large Russian orders in other industries.

Federal-Mogul Adds to Plant

DETROIT, Nov. 27—Federal-Mogul Corp. has broken ground for another large addition. This is the second recent expansion of importance by the company and will add 22,000 sq. ft. of floor space. The company reports 1928 as the best year in its history and present indications are that 1929 production will be even greater.

Belgium Buys U.S. Cars

WASHINGTON, Nov. 28—With new American models confirming popularity of cars imported from the United States, Belgian automobile sales at the present are more than 50 per cent concerned with cars from this country, according to cabled advices to the Department of Commerce. The present favorable condition is expected to continue.

Fairchild Develops Air Engine Silencer

Device Perfected in Collaboration With Maxim, Reduces Sounds to Hiss

NEW YORK, Nov. 24—Fairchild Aviation Corp. in collaboration with Maxim Silencer Co., has perfected a silencer for aircraft engines, according to annnouncement made yesterday by Sherman M. Fairchild, president of the former corporation.

This invention, which consists of a four-inch pipe, six feet long, running from the engine under the cabin, in which is included a metal spiral, produces absolutely no back pressure, according to the announcement. By the use of this silencer, which was produced as the result of two years' experiment, the sound of the exhaust is reduced to a hiss.

It now remains, according to Mr. Fairchild, to find methods of silencing the noise of the propeller and of the rocker arms in order to reduce the noise of flying to a minimum. Fairchild engineers are now at work on this problem and it is hoped that within another year a soundless power-plant for aircraft can be produced.

Develops Riveted Frame

NEW YORK, Nov. 26 — Fairchild Aviation Corp. has announced the development of a new small commercial training plane, which, by using a new production method, will be built at the rate of 50 a day. Instead of welded steel tubing the company will use riveted duralumin stampings for frames. The plane is powered with an 80 hp. Genet engine. It will be flown from Long Island to Chicago for inclusion in the exhibits at the international aircraft show, Dec. 1 to 9.

Roamer to Show 3 Lines

KALAMAZOO, Nov. 26—Roamer Consolidated Corp. will show three models at the New York and Chicago shows, the 8-78, priced $1,595 to $1,795; the 8-80, priced $1,895 to $1,985, and the 8-88, priced $2,495 to $2,985. The company will use Lycoming engines and Auto-Lite electrical equipment.

To Make Battery Boxes

DETROIT, Nov. 26—Evans Auto Loading Co. has entered manufacture of battery boxes and separator plates with orders approximating $2,500,000. The company has purchased the Western Lumber Mfg. Co., Marshfield, Ore., and has purchased a five-year supply of timber.

Foote Buys 4 Companies

CHICAGO, Nov. 26—Acquisition of four non-automotive concerns by Foote Brothers Gear & Machinery Co. and the offering to common stockholders of the latter of the privilege of purchasing additional stock at $20 a share is announced by W. C. Davis, president of Foote Brothers. Through completion of the transaction Foote Brothers will obtain a large portion of its own raw material and will greatly increase its customer outlet.

Leaders in Chrysler Sales Campaign

In preparing final plans for the Chrysler Corp. sales campaign in 1929, Joseph E. Fields, vice-president in charge of sales, has named John R. Lee (left) as personal assistant; Roy G. Peed (center), general sales manager of De Soto, and C. W. Matheson (right), general sales manager of Dodge Brothers

Export Group Effort Described by Reeves

NEW YORK, Nov. 27—Pointing out that 107 nations use automobiles and seven nations manufacture them, Alfred Reeves, general manager of the National Automobile Chamber of Commerce, painted an enthusiastic picture of the future of the export business of the automotive industry this noon before the regular meeting of the General Motors Export Luncheon Club.

Mr. Reeves told this club, which is made up of executives of General Motors Export Co., what has been done in the way of group effort to develop foreign markets and what still must be done in this direction.

The great need in the export market today, Mr. Reeves pointed out, is to place the automobile in the hands of every overseas user at as low a cost as possible. Much progress has been made in removing artificial barriers set up by various foreign nations to the ready purchase of automobiles, he said.

C.I.T. Signs With Westinghouse

NEW YORK, Nov. 28—Commercial Investment Trust Corp. has signed a contract with the Westinghouse Electric & Mfg. Co. under the terms of which C.I.T. will extend the financing facilities heretofore provided by the Westinghouse Acceptance Corp., a finance subsidiary of Westinghouse Electric. The Westinghouse Acceptance Corp. was formed a number of years ago to specialize in giving instalment financing service to manufacturers and dealers selling a product containing Westinghouse equipment.

24 States Increased Gasoline Tax in 1927

WASHINGTON, Nov. 24—Gasoline taxes during 1927 were increased in 24 states, the average increase being .63 cents per gallon, according to a survey just completed by the American Road Builders' Association. On Jan. 1, 1927, the average gasoline tax in the 44 states and the District of Columbia was 2.5 cents per gallon. On Jan. 1, 1928, the increases put into effect during the previous 12 months brought the average tax up to 3.19 cents per gallon.

During the year, the states of Alabama, Maryland, New Mexico and Texas increased their gasoline taxes two cents a gallon, while one cent increases were put into effect by Arizona, Arkansas, California, Colorado, Delaware, Florida, Idaho, Iowa, Minnesota, Michigan, New Hampshire, Ohio, Pennsylvania, Rhode Island, South Dakota and Vermont. Georgia, West Virginia and Wyoming increased their gasoline taxes one-half a cent per gallon. The State of Illinois put into effect a two-cent gasoline tax on Aug. 1, 1927, but this was declared unconstitutional and the tax was discontinued Feb. 25, 1928. New Jersey established a two-cent tax July 1, 1927, computed above as a two-cent increase.

In New Hampshire the tax was two cents per gallon on Jan. 1, 1927, being raised to three cents per gallon in May, 1927, and on Jan. 1, 1928, four cents a gallon tax went into effect in that state.

Kirk & Blum Opens in Detroit

CINCINNATI, Nov. 28—Kirk & Blum Mfg. Co., has opened a branch factory with sales and engineering office at 4718 Burlingame Ave., Detroit. The purpose of this plant will be to extend more prompt and efficient service to the automotive and other industries in Detroit and vicinity than has heretofore been possible through shipping materials from the Cincinnati plant.

Retail Sales Exceed 1927 Levels

(*Continued from page 806*)

Middle West and in the East. Except in a few scattered localities the general situation is good and dealers are strengthening their positions for the turn of the year.

Reports from leading centers follow:

New York

Sales of automobiles in this locality have registered their usual fall decline but taken as a whole are exceeding sales for November of last year. Liquidation of existing stocks of expiring models on the part of certain manufacturers and distributors has helped to build the total volume of sales for November to a point above sales for November of 1927. This process of liquidation has been more open and wide-spread this year than heretofore and has had a marked influence on the market for other cars. Used car stocks have not become as heavy as indications at the beginning of the month led certain dealers to expect. New car registrations in New York during the first two weeks of November were 4104 as compared with 3027 for the same two weeks in 1927.

Boston

Motor car sales in Boston for November may be classed as fair minus when new models are considered. Just after election there was a good proportion of sales for a few days. Then it slumped off. Most of the dealers feel that the price cuts to clean up before New York show has had some effect in slowing up sales. Used cars are even worse and may be classed as poor minus. That condition is general all along the line.

Atlanta

As the weather has been comparatively mild the past month, automobile sales have held up on a good basis in this district. Particularly was this true of cars of the lower priced class, Ford and Chevrolet gains being unusually good over last year, while medium priced cars showed a smaller gain. In higher priced merchandise sales were about the same. About normal stocks of cars are being held by most of the dealers in both the larger and smaller cities. Dealers still have large stocks of used cars on hand which they are selling at low prices. Motor trucks were again active during November and as has been the case every month so far this year showed a gain over the same month last year.

New Orleans

This locality is still suffering from a business depression which is reflected more noticeably in the automobile market than elsewhere. There is too much used equipment on hand. Dealers expect to move a large part of this during the Christmas holidays. This is possible on account of the climatic conditions. As to medium and higher priced cars there is a slight improvement over the same period of last year. Dealers here believe that shortly after the New Year there will be a marked improvement in business, partly on account of large sums of money to be expended in the rehabilitation of the flooded areas.

Detroit

New car sales will reach their lowest level so far this year in November, but indications are that the situation will be appreciably ahead of the corresponding period of last year. Sharp price reductions on several lines of cars have stimulated sales for those respective lines and have cleaned out stocks in preparation for new models to be introduced about show time. New car stocks in all lines appear to be lower than last year. Price reductions on the several lines have not reflected as badly against used car prices in general as had been anticipated in some circles. Despite heavy used car stocks, especially in the metropolitan area, the situation is being met by sales.

Chicago

New car sales were retarded somewhat during November by unseasonable weather, although dealers' sales showed no appreciable drop from October and, in fact, showed a gain over November of last year. New car stocks are receding, showing the effects of the efforts put forth in preparation for the introduction of new models by many companies. Used car stocks are high but are not considered abnormally so for the season of the year.

Cleveland

Decisive gains in new car sales are reported for November, deliveries for the first three weeks totaling 1638, compared with 1228 for the full month last year. Movement in used cars was brisk, though not quite on a par with new cars, 5362 sales being recorded in the first three weeks against 6326 for the entire month of November, last year. Continued delivery of long waited Ford orders is advanced for the exceptionally good business in new cars, according to Herbert Buckman, manager of the Cleveland Automobile Manufacturers & Dealers Association.

Milwaukee

The outlook for the remainder of the year is considered very favorable and distributors as well as dealers see nothing on the horizon that would make them apprehensive over the prospects for the early part of 1929. This is the time of year when demand slackens to the low point, but November business is better than last year following a gain of upwards of 85 per cent in October over last year. For the first 10 months, new car registrations for the state of Wisconsin numbered 80,051, compared with 74,363 a year ago. Of an October increase of 3405 new car sales, Ford accounted for 2000. General business conditions in this locality are active, with employment well maintained at the highest peace time peak in the history of Milwaukee, and an acute shortage of skilled workers in the foundry and machine shop industry. Many shops are running over-time in a more or less unsuccessful effort to keep deliveries apace with order specifications, and business on the books, not counting on orders to come, probably will make necessary the same high rate of production well past Jan. 1.

Cincinnati

November sales of new cars are running slightly behind October and a sharp decline is noted in used car registrations, though a big increase over figures for November a year ago in both new and used cars is shown by sales up to Nov. 22. A sharp drop in temperature during the present week has had a tendency to boost business in the service end of dealer establishments and accessory parts and equipment dealers also are being benefited by it. Used car inventories are uniformly low and dealers generally are satisfied with used car demand. General business is good and the rise in the stock market has been responsible for a healthy condition in all lines. New car sales this month are about 31 per cent over 1927, though the used car increase is only about 14 per cent.

Minneapolis

Automobile distributors and retailers are pleased with a return of good business. The usual routine of good business in September and October was not followed this year, but after a recession trade was renewed. Dealers are not taking more cars than they can handle as a rule, but inasmuch as lake navigation closes Nov. 28, there was a little spurt to get cars. As an average better cars seem to be on call this fall. The used car situation is better than it has been some time. Business is at a slightly better percentage than a year ago. General conditions are improved outside the larger cities of the Ninth Federal District, the volume of business for October being slightly under that of October last year in the cities.

Louisville

Sales for November while somewhat below those of October will be very good for the late fall, and are expected to show another increase, which will probably run about 50 per cent ahead of sales shown for November of last year. Ten months sales in 1928 have been 8392 cars, as compared with but 6169 cars for 10 months of last year. Distributors report good conditions and outlook over the state. The tobacco crop will start moving in the next 10 days. If tobacco brings anticipated good prices, as the high quality crop should bring, conditions should be excellent over the winter and spring. Better conditions are reported in the coal and oil fields. The corn crop is of good quality and bringing good money. Corn and tobacco are the money crops, and tobacco prices well, central Kentucky will be prosperous.

St. Louis

Sales of new cars have increased since the election and merchandise stocks have not been increased. Heavy sales of used cars were reported, with used car stocks reduced. Dealers anticipate a brisk winter business.

Dallas

Lower prices on several of the models, coupled with plenty of money in all sections of the district, kept automotive lines moving satisfactorily in Texas and parts of the adjoining states during November. The approach of the holidays has a tendency to boost new car sales. The number of new cars sold in Texas for the first 11 months of the year exceeded that for all 1927. New car sales in November were 6 per cent above those of October. These sales include some Christmas deliveries. Dealers stocks are normal. Ford is making more deliveries and his sales are showing material increase. Used car sales showed slight increase over October. More new and used cars and trucks are being sold in the

Exports, Imports and Reimports of the Automotive Industry for October of Current Year and Total for Ten Months Ending October, 1928

	Month of October				Ten months ending October			
	1927		1928		1927		1928	
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories	..	$28,037,185	..	$48,951,482	...	$330,910,287	...	$421,932,310
Electric trucks and passenger cars	23	29,555	..	...	109	193,965	96	117,323
Motor trucks and buses, except elec. (total)	8,352	5,946,883	16,573	10,087,425	88,312	57,821,783	112,564	74,978,902
Up to 1 ton, inclusive	6,440	3,180,800	12,488	5,547,312	71,966	33,736,312	84,470	41,980,672
Over 1, up to 2½ tons	1,759	2,305,643	3,765	3,677,603	14,373	18,285,671	25,420	26,356,588
Over 2½ tons	153	460,440	320	862,510	1,973	5,799,800	2,674	6,641,642
PASSENGER CARS								
Passenger cars, except electric (total)	19,366	14,828,903	29,951	21,897,503	240,873	177,255,603	317,699	225,119,073
Value up to $500, inclusive	4,587	1,676,953	...	...	56,552	21,015,189	...	...
Value over $500 up to $800	5,086	2,809,327	...	...	80,488	44,801,291	...	...
Value over $800 up to $1,200	6,403	5,241,325	...	...	69,267	59,487,659	...	...
Value over $1,200 up to $2,000	2,474	3,086,777	...	...	26,947	33,645,632	...	...
Value over $2,000	618	2,014,521	...	...	7,619	18,305,832	...	...
PARTS, ETC.								
Parts, except engines and tires	...	...	...	...	...	...	...	...
Automobile unit assemblies	...	2,206,678	...	6,061,677	...	37,309,609	...	53,685,136
Automobile parts for replacement	...	3,780,337	...	9,853,890	...	41,430,992	...	48,438,299
Automobile accessories	...	612,811	...	651,551	...	6,744,527	...	7,682,698
Automobile service appliances (n. e. s.)	...	241,185	...	634,001	...	6,343,964	...	6,003,553
Trailers	87	35,756	128	75,449	825	375,296	705	322,779
Airplanes, seaplanes and other aircraft	16	203,489	6	48,323	44	592,906	140	1,527,825
Parts of airplanes except engines and tires	...	111,613	...	74,013	...	501,179	...	1,079,732
BICYCLES								
Bicycles and tricycles	266	6,873	265	7,361	3,833	105,145	4,069	108,681
Motorcycles	1,879	437,821	1,308	304,385	16,309	3,668,702	15,985	3,719,817
Parts except tires	...	100,769	...	130,415	...	1,052,120	...	1,238,684
INTERNAL COMBUSTION ENGINES Stationary and Portable								
Diesel and Semi-Diesel	33	75,958	389	65,776	579	986,248	887	979,668
Other stationary and portable:								
Not over 10 Hp.	2,433	230,841	4,136	339,511	24,411	2,177,584	32,281	2,735,428
Over 10 Hp.	216	92,218	490	203,477	2,353	1,427,053	4,472	1,750,700
Automobile engines for:								
Motor trucks and buses	684	68,502	378	88,347	5,063	594,339	15,184	1,466,406
Passenger cars	4,860	563,516	2,210	311,089	87,684	9,559,469	99,691	10,444,473
Tractors	83	18,409	206	78,990	1,125	443,494	635	210,533
Aircraft	13	57,511	7	44,763	65	375,284	132	491,263
Accessories and parts (carburetors)	...	198,438	...	258,936	...	2,828,991	...	2,993,608
IMPORTS								
Automobiles and chassis (dutiable)	72	113,954	59	162,800	527	939,044	431	942,647
Other vehicles and parts for them (dutiable)	...	32,917	...	49,485	...	210,409	...	511,515
REIMPORTS								
Automobiles (free from duty)	5	6,550	34	30,476	149	219,922	215	238,964

rural districts now than at any time during the year. The outlook for December business is good.

Kansas City

Automobile sales conditions are in almost a turmoil here now, due to the price slashing that has been going on in preparation for the announcement of new models. Companies with no new models or price cuts, placed at a disadvantage, are reverting to "long trades" on used cars with the result used car lots are becoming overloaded—the first time this year. However, the unsettled condition is among the dealers and not the public for the buying is on an even keel with only the attitide of "picking up a bargain" being manifest. Some firms are reporting record-breaking sales for November while others are more conservative. Sales as a whole are better than in October and approximately 15 per cent better than last November.

Los Angeles

November new car sales in southern California are running about even or slightly under November of last year. There was the usual seasonal decline from last month. The market still fails to show expected strength and used cars continue to move well with slight improvement in truck market.

Denver

The car market has been more than seasonably slow this month, with sales considerably below normal, used car stocks accumulating and an increase in repossessions. The depression has been pronounced in the coal mining districts, where the unusually mild winter has curtailed the production of coal. In the agricultural districts around Greeley, Fort Morgan and Fort Collins, the short sugar beet crop, attributed to a bad spring, and a failure of agreement between growers and factories, combined with an entire lack of market potatoes, have stopped buying almost altogether. There has been a painful lack of demand for beet trucks this year, and this is reflected in the depressed market for light trucks all over this region.

Seattle

Due to seasonal conditions, retail car sales for November were slightly under last month, although holding their own as compared with sales for November, 1927. Dealers report that sales for the year so far, as compared with last year, will be approximately 10 per cent lower. Stocks are heavy in all lines of new cars. The fact that Ford is still behind in deliveries accounts for the slight loss in sales. The used car market is heavy, and prices are quite a bit lower. Truck sales for this territory for 1928 are on a par with sales for the corresponding period of 1927. Credit conditions are very good, repossessions about normal, and business conditions, generally speaking, seem to be very good.

San Francisco

Sales of passenger cars and trucks in northern California for November show an increase of more than 60 per cent over November of 1927, but a decrease of about 12 per cent from October, this year. November, 1927, had shown a decided falling off from the figures of the year before. Dealers attribute the decrease from October's sales to the usual decline in the fall months.

Oakland Extends Parts Making in New Plants

PONTIAC, Nov. 26—Oakland Motor Car Co. has announced that a new Pontiac will shortly appear on the market. The new car will be larger, more powerful and more luxurious than the present car. Production of parts for the new car is now under way. The price range will remain as on the present line.

Extensive building projects at the factories here are now practically completed and will give the company a capacity of 350,000 Oakland and Pontiac cars in 1929. The new Pontiac will be built almost entirely in the Oakland factories, new plant units producing many parts formerly manufactured elsewhere.

Equipment Body to Meet

PHILADELPHIA, Nov. 26—Equipment for Motor Trucks, Inc., whose membership is made up of manufacturers and distributors of bodies and equipment for motor truck chassis, will meet in Cleveland Jan. 15 at the Hotel Winton during the week of the good roads show. Companies in the body and equipment business are invited.

Road Exposition Jan. 14

WASHINGTON, Nov. 26—The road exposition to be held in conjunction with the annual convention of the American Road Builders' Association in Cleveland, Jan. 14 to 18, will be the largest the association has yet held.

Bay State Insurance Before Court Dec. 12

BOSTON, Nov. 24—The Massachusetts Supreme Court has set Dec. 11 as the date upon which it will hear the litigation arising from the increase in rates in automobile liability insurance ordered put into effect by acting Commissioner Arthur W. Linnell. Representative Elmer E. Spear, of Everett, who filed the first petition, has been joined by Senator Broadbine, of Winthrop, also a group of citizens from that town, while the City Council of Cambridge has voted to be represented in the action.

Meanwhile the Boston Automobile Club at its annual meeting voted to request Governor Alvan T. Fuller to appoint a fact-finding committee, 50 per cent of which shall be motor car owners who have no affiliation with insurance interests, to investigate the rates and report to the governor and council before Feb. 1. Also the club has requested the governor to have the attorney general make an investigation of those insurance companies that are cutting rates on property damage policies, with a view of learning if there has been any rebating that is illegal. The association also expressed to the governor the opinion that the hearing held by Commissioner Linnell was not a public one in the real sense of the word.

Raybestos Earns $911,202

NEW YORK, Nov. 24—Raybestos Co. reports net income in the first nine months this year of $911,202, equivalent to $7.36 a share on common stock. This compares with $710,385 in the same period last year. The consolidated balance sheet as of Sept. 30 shows net working capital of $3,094,307, with a ratio of current assets to liabilities of 8.3 to 1.

Auburn to Add to Plant

CHICAGO, Nov. 27—Auburn Automobile Co. has let additional contracts involving an approximate $350,000 to the Austin Engineering Co. for additional factory buildings at its plant at Connersville, Ind.

Coming Feature Issue of Chilton Class Journal Publications

Feb. 23—Statistical Issue Automotive Industries.

Electric Signs Planned for 1929 National Shows

NEW YORK, Nov. 24—S. A. Miles, manager of the national automobile shows, has appointed a special committee, consisting of Samuel Asch, exposition architect; Lorenz Kleizer, interior decorator, and Arthur Musson, lighting engineer, to work out the decorative plan for the New York and Chicago shows.

Mr. Asch has been in charge of decorative work for the national shows for several years. Mr. Kleizer is chairman of art of the Exhibits of Art in Trades Club and was the American delegate to the exposition of decorative arts held in Paris a few years ago.

Among the new decorative features already decided upon will be the use of electric signs with each car exhibit. These signs will be made of illuminated opal-glass and will be either hung or built into the walls.

A.E.R.A. Schedules Meeting

NEW YORK, Nov. 24—American Electric Railway Association will hold its 48th annual convention in the new Atlantic City Municipal Auditorium, Atlantic City, N. J., Sept. 28 to Oct. 4, 1929. The usual exhibit also will be held at this time in the municipal auditorium.

Oakite Holds Conference

NEW YORK, Nov. 24—The annual sales conference of Oakite Products, Inc., was held in the general offices here last week, the company completing 20 years of service in the industrial cleaner field. Nineteen papers were read on technical sales and service topics.

Tire Inventories Lower October 1

NEW YORK, Nov. 24—Increased activity during September in both production and shipment of balloon tubes and casings resulted in inventories higher than at the close of September a year ago, according to the monthly statistical bulletin of the Rubber Association of America. Inventories, however, are lower than at the end of August, resulting from a decrease in both production and shipments. Comparative figures follow:

		Inventory	Production	Shipments
Balloon Casings				
Sept.	1928..	4,935,836	3,220,369	2,327,028
Aug.	1928..	4,986,800	3,678,139	3,814,016
Sept.	1927..	3,927,917	1,807,924	2,132,318
Balloon Inner Tubes				
Sept.	1928..	6,433,804	2,782,759	2,938,309
Aug.	1927..	6,614,884	3,474,338	3,655,301
Sept.	1927..	5,152,658	1,599,987	2,046,955
High Pressure Cord Casings				
Sept.	1928..	2,339,798	1,853,887	1,990,535
Aug.	1928..	2,465,358	1,903,345	2,416,386
Sept.	1927..	3,151,501	1,755,119	2,051,117
High Pressure Inner Tubes				
Sept.	1928..	3,673,789	2,544,561	2,427,444
Aug.	1928..	3,833,201	2,783,115	3,357,277
Sept.	1927..	4,980,749	2,638,606	3,021,458

Otis Adds 3 Furnaces

CLEVELAND, Nov. 24—Otis Steel Co. has put into operation the last of three new hearth furnaces to be constructed this year. The company now has at its Riverside plant eight low cost open hearth furnaces with an annual capacity of 720,000 tons.

Opens Foundry Addition

DETROIT, Nov. 24—The Pontiac Pattern & Engineering Co. has opened its new $25,000 foundry addition. The addition is two stories high, 70 by 80 ft., and will enable the company to expand its line to include castings.

Eaton Opens Detroit Office

CLEVELAND, Nov. 26—Eaton Axle & Spring Co. has opened offices in the General Motors Building, Detroit, to improve facilities for service to the industry in the Detroit territory.

Calendar of Coming Events

SHOWS

All-American Aircraft Show, Detroit Board of Commerce, Detroit..Apr. 6-14
American Road Builders Association, Inc., Cleveland Auditorium..Jan. 14-18
Amsterdam Automobile Show....Jan. 11-20
Automobile Salon, Inc., Hotel Drake, Chicago .....Jan. 26-Feb. 2
Automobile Salon, Inc., Hotel Biltmore, Los Angeles.....Feb. 9-16
Automobile Salon, Inc., Palace Hotel, San Francisco .....Feb. 23-Mar.2
Boston, Mass., Mechanics Bldg...March 2-9
Brussels .....Dec. 8-19
*Chicago, National, Coliseum, Jan. 26-Feb. 2
Geneva Automobile Show.....Mar.15-24
Melbourne Automobile Show.....May 2-11
*New York, National, Grand Central Palace .....Jan. 5-12
Rome Automobile Show....Jan 30-Feb. 16
Western States Metal and Machinery Exposition, Los Angeles.....Jan. 14-18

* Will have special shop equipment exhibit.

CONVENTIONS

American Road Builders Ass'n, Inc., Cleveland Auditorium.....Jan. 14-18
American Society for Steel Treating, Semi-Annual Meeting, Los Angeles .....Jan. 14-18
National Highway Traffic Assoc., New York City, 12 E. 53rd St.....Dec. 11-12
Chicago Power Exhibition and Conference, Coliseum, Chicago....Feb. 12-16
Internation Air Conference, Washington .....Dec. 12-14
Chicago Aeronautical Assoc., Stevens Hotel, Chicago, Ill.....Dec. 5-6
Manufacturers & Distributors of Motor Truck Equipment, Cleveland, Ohio .....Jan. 15
National Automobile Dealers Association, Palmer House, Chicago..Jan. 28-29
National Metal Congress, Los Angeles .....Jan. 14-18
National Research Council, Washington .....Dec. 13-14

S. A. E.

National

Chicago, Dec. 5-6—Aeronautic.
Detroit, Book-Cadillac, Jan. 15-18—Annual.
New York, Hotel Astor, Jan. 10—Annual Dinner.

Sectional

Cleveland .....Dec. 10
Detroit .....Dec. 10
Indiana-Dayton .....Dec. 15
Metropolitan .....Dec. 7
(Joint meeting with Metropolitan Section A.E.R.A.)
Milwaukee .....Dec. 5
New England .....Dec. 12
Northern California .....Dec. 13
Pennsylvania .....Dec. 12
Southern California .....Dec. 7